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Luka Bekić

Novovjekovno staklo iz podmorja Istre i Dalmacije

Post-Medieval glass from the seabed of Istria and Dalmatia

Zadar, 2014.

MUZEJ ANTIČKOG STAKLA

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Uvod

Tijekom ronjenja duž obala Istre i Dalmacije pronađena su mnoga arheološka nalazišta i na njima brojni zanimljivi nalazi. U prvom su planu uvijek rimski nalazi, poput amfora, mada se u morskim dubinama pronalaze i mnogi drugi odbačeni i izgubljeni predmeti iz ostalih razdoblja, koji zaslužuju naše zanimanje.

Staklo je svojom atraktivnošću tijekom svih povijesnih razdoblja pobuđivalo pozornost i izazivalo divljenje, a svojom složenom tehnologijom izrade i krhkošću držalo visoke cijene nabave. Tako je bilo i u novom vijeku, koji je nastupio nakon povijesnog otkrića Amerike, na samom kraju 15. st.

Nakon srednjovjekovne proizvodnje, staklo novovjekovnog razdoblja donosi mnoštvo novosti u tehničkom pogledu kao i raznolikosti oblika i ukrasa. Staklo se u to doba

Introduction

Diving along the coasts of Istria and Dalmatia unearthed many archaeological sites with many interesting finds. Roman finds such as amphorae seem to be most interesting though many other discarded and lost objects from other periods also deserve our attention.

Due to its attractiveness glass has always attracted attention and evoked admiration through all historical periods. It was quite expensive due to complex technology of production and fragility. The situation did not change in the Post-Medieval Era, after the discovery of America, at the very end of the 15th century.

After medieval production, glass of the Post-Medieval Era brought a number of novelties in techical terms as well as regarding forms and ornaments. At the time glass was produced in several European centers by many

Slika 1. Sidrište s brodovima iz doba iz kojeg potječu nalazi prikazani na izložbi. Isječak od *Schepen op de rede*, Willem van de Velde mlađi, 1658. g. (www.sailingwarship.com).
Figure 1. Berth with ships from the period of the artifacts presented on the exhibition. Segment from *Schepen op de rede*, Willem van de Velde the younger, 1658 (www.sailingwarship.com).

izrađivalo u više europskih središta s brojnim majstorima i njihovim radionicama. Za naš su jadranski krug svakako najvažniji proizvodno središte Mletci, odnosno otok Murano. Vrhunski primjerci ovog stakla poznati su nam s više nalazišta, a jedno od najvažnijih kod nas brodolom je kod Gnalića (Lazar, Willmott 2006; Fadić 2011). Staklo s ovih nalazišta očito je namijenjeno vanjskoj trgovini i to bogatim naručiocima. To se vidi iz posebnog načina obrade i ukrašavanja, kao i iz specifičnih oblika ovog posuđa.

No uz vrhunske umjetničke primjerke novovjekovnog stakla, u uporabi

masters in their workshops. Venice i.e. the island of Murano was definitely the most importat production center for our Adriatic circle. Top quality examples of this glass production were found at several sites such as the shipwreck at Gnalić as one of the most important examples in our region (Lazar, Willmott 2006; Fadić 2011). Glass from these sites was evidently made for external trade and rich customers. This is evident in special manner of treatment and decoration as well from specific forms of the vessels.

Alongside these top quality artistic examples of the Post-Medieval Era

je od 16. do 19. stoljeća bilo mnogo više običnih staklenih posuda, kojima se puk svakodnevno koristio. To su uglavnom boce za piće i čaše. Nalazi tog staklenog posuđa čine okosnicu izložene zbirke. Od sredine 19. st. izrada staklenih posuda, poglavito boca, počinje se odvijati u manufakturama koje se opremaju tehnički sve naprednijom opremom i dovode do automatizacije proizvodnje. To staklo možemo zvati modernim, jer se od tada do danas u tehničkom smislu nije više osobito mijenjalo.

Tema je ove izložbe staklo pronađeno u hrvatskom podmorju, u raznim uvalama i sidrištima te na otocima i rtovima uz plovne putove. Stoga možemo reći da je ovdje uglavnom izloženo staklo kojim su se koristili mornari za svoje potrebe na brodovima kojima su plovili uz obalu Istre i Dalmacije.[1] To su mogli biti hrvatski moreplovci, ali i brojni drugi, ne samo iz zemalja Sredozemlja nego i iz sjevernih i zapadnih dijelova Europe.

glass, common glass vessels were used on everyday basis by ordinary people from the 16th to 19th centuries. Mostly these were bottles for drinking and beakers. Finds of these glass vessels make the basis of the exhibited collection. From the mid-19th century production of glass vessels, primarily bottles, started to take place in manufactures whose equipment was becoming more advanced leading to automatization of the production. We can refer to this glass as modern as it did not change significantly in technical terms from that period to the present day.

This exhibition presents glass found in the Croatian undersea world, in various coves and berths, on the islands and capes along the naval routes. Therefore we can say that the glass exhibited here was used mostly by the sailors for their needs on ships on which they sailed along the coasts of Istria and Dalmatia.[1] These may have been Croatian sailors, and many others, not only from the Mediterranean countries

1 Staklo potječe iz redovitih pregleda podmorja Istre i zadarskog akvatorija koje je provodio Međunarodni centar za podvodnu arheologiju tijekom nekoliko godina po programima Ministarstva kulture RH. Zahvaljujem Marku Meštrovu, Mladenu Pešiću, Domagoju Perkiću, Karli Gusar i svim ostalima koji su pomogli da se prikupe i izlože nalazi te objavi katalog.

1 Glass was found in regular surveys of the undersea of Istria and Zadar maritime zone which were conducted by the International Center of Underwater Archaeology during several years in accordance with programs of the Ministry of Culture of the Republic of Croatia. I would like to thank Marko Meštrov, Mladen Pešić, Domagoj Perkić, Karla Gusar and all others who helped in collecting and exhibiting finds and in publishing of the catalogue.

Uz to, kao zanimljiv dodatak ovdje se izdvajaju i podvodni nalazi vezani uz proizvodnju stakla tog razdoblja, iz za sada tajanstvene radionice koja je djelovala u Veštru kod Rovinja. Pronalazak tragova radionice koja je izrađivala staklo po uzoru na mletačku školu na našoj je obali jedinstven slučaj, kojem u budućnosti valja posvetiti pozornost i podrobno ga istražiti.

but also from northern and western parts of Europe.

Another interesting group of artifacts are underwater finds related to glass production from that period from still mysterious workshop which was active in Veštar near Rovinj. Finding traces of a workshop which made glass after the „Venetian school" on our coast is a unique case which should be explored comprehensively in future.

Problem istraživanja novovjekovnog stakla

Mada se o proizvodnji stakla danas mnogo zna, te se od pretpovijesnih pa naročito antičkih vremena i srednjeg vijeka oblici posuda prepoznaju i lako datiraju, ovdje predočujemo jednu malu skupinu zapostavljenih nalaza, o kojima se ne zna mnogo. Ovu skupinu nalaza redovno susrećemo tijekom arheoloških istraživanja, ali se o njoj nije mnogo pisalo. Razlog tomu je što je riječ o svakodnevno korištenom staklu, koje nije imalo posebno raskošno izvedene ukrase i tako privlačilo pažnju istraživača.

Također, novovjekovno je staklo, kao i ostala arheološka građa iz tog razdoblja, uglavnom bila nezanimljiva istraživačima, vjerojatno zbog nedostatka svoje starosti, a time i atraktivnosti. Za razliku od antičkog stakla, o novovjekovnom se vrlo malo pisalo.

Problems in research of the Post-Medieval Era glass

Although we know a lot about the glass production, and vessel forms are easily recognizable and datable from prehistory over the antiquity in particular and Middle Ages, here we will represent a small group of neglected finds, which are poorly known. This group of finds is found regularly during the archaeological research, but little was written about it as it was ordinary glass for everyday use which did not have rich ornaments and therefore it did not attract researchers' attention.

Post-Medieval Era glass as well as other finds from that period were mostly not interesting to the researchers probably due to lack of its „antiquity" and related attractiveness. Few researchers wrote about the Post-Medieval Era glass as opposed to ancient glass.

Stoga prije analize nalaza valja naglasiti kako ne postoje potpuno jasni parametri za dataciju ovih arheoloških nalaza te se na tom problemu još mora dosta raditi. To znači da ovakve nalaze treba češće objavljivati, a posebice one koji potječu iz nekih stratigrafski značajnih cjelina, neovisno o tomu je li riječ o datiranim brodolomima ili stratigrafski vrijednim cjelinama na nekim kopnenim nalazištima.

Većina ovih nalaza može se pronaći na cijelom području Jadrana, a koliko mi je poznato, češće na sjevernom dijelu. Stoga već u početku možemo pretpostaviti kako ovakve staklene posude uglavnom potječu iz radionica na sjevernom dijelu Jadrana, pod utjecajem mletačkih radionica. Na hrvatskoj strani Jadrana postojanje ovakvih radionica zasad nije dokumentirano ni u povijesnim ni u arheološkim izvorima, osim Veštarskog slučaja koji je ovdje zasebno predočen.

O mletačkim radionicama, to jest radionicama na otoku Muranu, načelno se mnogo zna, međutim poznata nam je samo njihova produkcija najluksuznijeg stakla. To muransko ili venecijansko staklo iznimno je značajno za sveopću staklenu produkciju najviše klase u Europi. No također je važno i za naše skromne staklarske proizvode, koje su si mogli priuštiti i mornari, ribari i težaci iz naših krajeva.

Sličnost nekih tehničkih te vizualnih rješenja vidjet ćemo i u

Therefore before the beginning of the analysis we need to emphasize that there are no completely clear parameters for dating these archaeological finds but this problem needs to be further analyzed. This means that these finds should be published more frequently, particularly the ones originating from units important in stratigraphic terms, whether firmly dated shipwrecks or stratigraphically important units at certain land sites.

Most of these finds can be found in the entire Adriatic region, and to the best of my knowledge they are more frequent in its northern part. Therefore we can assume that such glass vessels mostly originate from the workshops in the northern part of the Adriatic, under the influences of the Venetian workshops. On the Croatian side of the Adriatic presence of such workshops has not been documented, neither in historical nor in archaeological sources except for the case of Veštar which was represented separately here.

Generally we know a lot about the Venetian glass workshops i.e. workshops on the island of Murano, but we actually only know about their production of the most luxurious glass. This Venetian or Murano glass is exceptionally important for the general glass production of the highest category in Europe. It is also important for our modest glass products which were affordable to sailors, fishermen and peasants from our regions.

primjerima iz naših podmorskih nalaza. No jedno je od najvažnijih pitanja uz ove staklene predmete kako ih datirati. To ćemo pokušati uz pomoć objavljene literature o već spomenutom brodolomu kod Gnalića te nekim drugima.[2] Ovi nam brodolomi načelno pokazuju kakvi su oblici i boje stakla uvriježeni u 16. pa i 17. st. Produkcija 19. stoljeća, ali i ranog 20. stoljeća poznata nam je jer postoji u određenom kontinuitetu, poput boca za piće Maraskino. Ostaje nam definirati proizvodnju 17. i 18. st. što ćemo pokušati uz neke nove nalaze te datacije koje se za slične predmete pronalaze u aukcijskim kućama. No većina predmeta koja je ovdje izložena nema izravnih usporedaba u objavljenoj arheološkoj građi i stoga je ovo zapravo pionirski rad u otkrivanju proizvodnje stakla za svakodnevnu uporabu od 16. do 19. st. na području Jadrana.

Similarities of some technical and visual details will be evident through examples of our underwater finds. One of the most important questions related to these glass artifacts is how to date them. We will try to do this on the basis of published works about the previously mentioned shipwreck near Gnalić and some others.[2] These shipwrecks indicate generally what forms and colours of glass were common in the 16th and even 17th century. Production from the 19th and early 20th century is well known as it exists in certain continuity such as the bottle for Maraschino. What remains is production of the 17th and 18th century. We will try to define it on the basis of some new finds and datings which can be found in the auction houses for similar objects. Most objects exhibited here have no direct comparisons in the published archaeological finds and therefore this is actually a ground-breaking work in understanding production of glass for everyday use from the 16th and 19th centuries in the Adriatic region.

2 U Hrvatskoj je do sada objavljeno nekoliko radova koji donose ilustracije novovjekovnog stakla, posebice onih s brodoloma (Kisić 1982, Lazar, Willmott 2006; Fadić 2011, Radić-Rossi 2006, 2012; Ferri 2014), ali i s kopnenih nalazišta (Pešić 2006, Horvat, Biondić 2007), no kako je tu uglavnom riječ o luksuznijoj robi, nema mnogo paralela s nalazima iz ove zbirke.

2 Several works have been published in Croatia with illustrations of the Post-Medieval Era glass, particularly glass finds from the shipwrecks (Kisić 1982, Lazar, Willmott 2006; Fadić 2011, Radić-Rossi 2006, 2012; Ferri 2014) and also from land sites (Pešić 2006, Horvat, Biondić 2007), but as mostly luxurious finds were presented in them, there are few parallels with finds from this collection.

Ovalne i višekutne boce novovjekovnog razdoblja

Najčešći stakleni nalaz koji se može pronaći u našem moru, a da potječe iz novovjekovnog razdoblja jest boca. Boce koje se mogu datirati u razdoblje od 16. do 19. st. razlikujemo po oblicima pa im tako tijelo može biti oblog, ovalnog, četverokutnog ili šesterokutnog presjeka. No posebno su važni njihovi gornji dijelovi, odnosno vrat i obod. Upravo po tim dijelovima možemo nešto više naslutiti o njihovoj dataciji.

Prva skupina s većim brojem nalaza boce su tanjih stijenki, vodoravnog ramena, kratkog vrata i široko razvraćenog, ljevkastog oboda. Promjer otvora kreće se između najužih od 42 mm pa do najšireg primjerka od 66 mm. Boce su često ukrašene dodanom staklenom trakom na vrhu oboda u bijeloj boji (31, 32, 34, 36, 37, 38, 39, 40, 45, 46, 41, 42, 44, 60, 66, 191, 221, 222, 223, 224, 225, 264), i njih određujemo kao podskupinu 1B. Nešto manji broj boca nema te dodatne bijele trake (33, 35, 43, 62, 67, 71, 79, 192, 208) i njih smještamo u podskupinu 1A. Mada u zbirci nema cjelovitih primjeraka, poneke gornje dijelove ovih boca možemo bez sumnje povezati s donjim dijelovima (24, 25, 22, 28, 80, 190, 199, 250, 261, 262 itd.). Na osnovi toga možemo zaključiti kako su gotovo sve boce imale četverokutan

Oval and polygonal bottles of the Post-Medieval Era

Most frequent glass find which can be found in our undersea from the Post-Medieval Era is a bottle. Bottles which can be dated to the period from the 16th to 19th century are recognizable after their forms so that their bodies can be rounded, oval, square or hexagonal in cross-section. Their upper parts are particularly important i.e. neck and rim. We can learn something more about their dating on the basis of these parts.

The first group with a bigger number of finds are bottles with thin walls and horizontal shoulder, short neck and widely everted, funnel-shaped rim. Diameter of the opening varies from 42 mm to 66 mm. Bottles are often decorated with a white glass band at the top of the rim (31, 32, 34, 36, 37, 38, 39, 40, 45, 46, 41, 42, 44, 60, 66, 191, 221, 222, 223, 224, 225, 264) and they are classified as the subgroup 1B. Somewhat less bottles bear no such white band (33, 35, 43, 62, 67, 71, 79, 192, 208) and they are classified as the subgroup 1A. Although there are no complete examples in the collection, some upper parts of these bottles can doubtlessly be joined with lower parts (24, 25, 22, 28, 80, 190, 199, 250, 261, 262 etc.). On the basis of these considerations we can conclude that almost all bottles had square or

Slika 2. Gornji dijelovi boca 1. A skupine (Foto: L. Bekić)
Figure 2. Upper parts of the bottles of group 1. A (photo: L. Bekić)

ili šesterokutni presjek tijela, promjera od 85 do 123 mm, što nam govori kako u ovoj skupini ima i prilično velikih boca. Jedino su boca 31 sa Selina i 66 iz Veštra imale ovalni presjek. Boce ove skupine uglavnom su plavo-zelene te maslinasto-zelene, ali ima i nekih s blijedim ljubičastim i smećkastim tonovima. Na blago uzdignutom dnu redovno imaju trag reza odvajanja od šipke za modeliranje.

hexagonal cross-sections of the bodies with diameters varying from 85 to 123 mm, indicating that there were quite big bottles in this group. Only bottles 31 from Seline and 66 from Veštar had oval cross-sections. Bottles from this group are mostly blue-green or olive-green but there are also some in pale purple and brownish tones. On the slightly concave base they regularly have pontil marks.

Slika 3. Gornji dijelovi boca 1. B skupine (Foto: L. Bekić)
Figure 3. Upper parts of the bottles of group 1. B (photo: L. Bekić)

Druga glavna skupina boce su vodoravnog ramena, s izduženim zakošenim grlom u obliku čunja i ravnim, uspravnim obodom bez zadebljanja (52, 57, 63, 64, 72). One su najčešće tamnije zelene boje i prema dimenzijama u prosjeku su nešto manje nego primjerci iz prethodne skupine. Stijenke su donekle deblje nego kod boca iz prethodne skupine. Promjer otvora im je od 16 do 26 mm. Čini se kako su bile redovito četverokutnog presjeka tijela, s promjerom tijela od 48 do oko 100 mm. Odgovarajućih donjih dijelova tih promjera i presjeka nema u

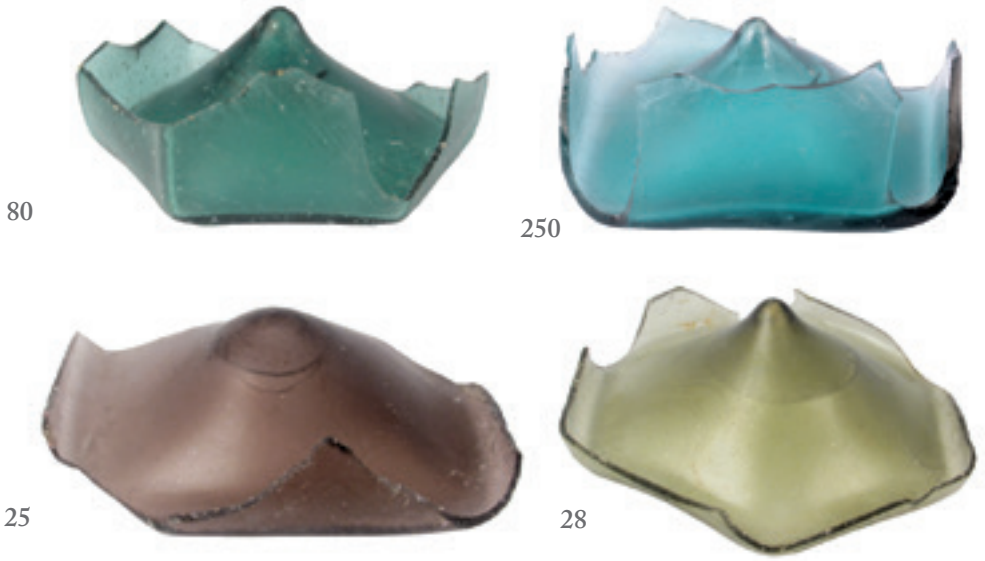
The second major group are bottles with horizontal shoulder, elongated slanted skittle-shaped neck, and flat, vertical rim without a thickening (52, 57, 63, 64, 72). They are most often somewhat darker green in colour and they are smaller then the examples from the previous group. Walls are somewhat thicker than on the bottles from the previous group. Diameter of the opening is from 16 to 26 mm. It seems they regularly had body with square cross-section and diameter of the body from 48 to 100 mm. There are no conjoining lower parts in this collection

ovoj zbirci, ali nema razloga sumnjati kako su u donjem dijelu bile iste kao i četverokutne boce prethodne skupine.

Od ove prve dvije glavne skupine starije su boce prve skupine s širokim ljevkastim obodom, tanjih stijenki, uključujući i one ukrašene bijelom trakom. Naime, široka ljevkasta grla tradicija su koja vuče porijeklo od boca 14. i 15. st. kao što je i ukrašavanje trakama u drugoj boji tipično za starija razdoblja, 13. - 15. st. (Pešić 2006, 118). Aplicirane bijele staklene trake na staklu često su zastupljen element u 16. st., što je razvidno iz primjera Gnalića (Lazar, Wilmot 2006, 42) i Zadra (Pešić 2006, Fig.14,15). Bijela neprozirna boja trake ukazuje na tzv. *lattimo* staklo, koje je u proizvodnji

but there is no reason to doubt that they were identical in their lower part to square bottles from the previous group.

Out of these first two main groups, bottles from the first group with wide funnel-shaped rim and thinner walls are earlier including the ones decorated with a white band. Namely wide funnel-shaped necks are a tradition having origin in the bottles from the 14th and 15th century as well as decoration with bands in different colour is typical of the earlier periods, 13th – 15th cent. (Pešić 2006, 118). Applied white glass bands on glass are frequent element in the 16th century which is evident on the example from Gnalić (Lazar, Wilmot 2006, 42) and Zadar (Pešić 2006, Fig.14,15). White opaque colour of



Slika 4. Donji dijelovi boca 1. skupine (Foto: L. Bekić)
Figure 4. Lower parts of the bottles of group 1. (photo: L. Bekić)

na Muranu od 16. st. Stoga možemo zaključiti kako se prva skupina načelno može datirati u kraj 16. i do početka 18. st. kada se javljaju zadnji primjerci. Što se tiče podskupina 1A i 1B, zapaža se kako neki primjerci 1A podskupine imaju tanje stijenke i prozirnije boje (npr. 71) čime nalikuju nešto starijem staklu pa možemo zaključiti kako su se bijele trake počele dodavati na već formirani tip boca.

Tri ulomka svjetlozelenih boca s bijelim obrubom oboda koje bi pripadale skupini 1B pronađene su na brodolomu Drevine u Koločepskom kanalu (Kisić 1982, Sl.16). Autorica ih pripisuje muranskoj proizvodnji i smatra da su služile za čuvanje ljekarija. To navodi ponajviše zbog drvene brodske škrinje koja sadrži staklene boce za lijekove, a datira se u 18. st. i čuva u Pomorskom muzeju u

the band resembles *lattimo* glass which was produced on Murano in the 16th century. Therefore we can conclude that the first group can generally be dated to the end of the 16th and until the beginning of the 18th century when last specimens appear. In subgroups 1A and 1B, we can notice that some examples of 1A subgroup have thinner walls and more transparent colours (e.g. 71) which is why they resemble somewhat older glass so we can conclude that white bands were applied on previously formed bottle type.

Three fragments of light green bottles with white lining of the rim which belong to group 1B were found on the Drevine shipwreck in Koločepski kanal (Kisić1982, fig.16). The author ascribes them to the Murano production and believes they were used for storing medicines

Slika 5. Gornji dijelovi boca 2. skupine (Foto: L. Bekić)
Figure 5. Upper parts of the bottles of group 2. (photo: L. Bekić)

Slika 6: Ulični prodavač stakla s bocama skupine 1 i 2 na grafici iz 17. st. (Migliori 2001, 31)
Figure 6: Street seller of glass with bottles of groups 1 and 2 on a print from the 17th century (Migliori 2001, 31)

Dubrovniku (slika 7, desno). Međutim, slične boce iz škrinje zapravo su manje i drugih oblika. Drugih objava nalaza boca 1. skupine u Hrvatskoj nema.

Od 17. st. oblici se počinju modificirati pa uz neke očito prijelazne primjerke dolazi do promjena, tako da bi u kraj 17. st. i prvu polovicu 18. st. mogli datirati boce druge skupine, tamnijeg zelenog tona s izduženim čunjastim uskim grlom. Također je vremenom izražena tendencija zadebljanja stakla pa su tako mlađe boce uvijek nešto debljih stijenki (Horvat, Biondić 2007, 131), baš poput boca 2 skupine, koje su gotovo redovno debljih stijenki nego boce 1 skupine. Ipak, jednim dijelom

because of a wooden chest from a ship used for keeping glass bottles for medicines dated to the 18th century and preserved in the Museum of Naval History in Dubrovnik (figure 7, right). Though similar, bottles from the chest are smaller and in various shapes. There are no other publications of the finds of group 1 in Croatia.

From the 17th century onwards forms start to change so that we could date bottles from the second group, dark green in colour with elongated skittle-shaped narrow neck to the end of the 17th and first half of the 18th century alongside some evidently transitory forms. There is also strong tendency of gradual thickening of glass so that later bottles always have somewhat thicker walls (Horvat, Biondić 2007, 131) just like the bottles from group 2 which almost regularly have thicker walls than the bottles of group 1. However in a part of the 17th and 18th century both types of bottles were made so we can expect that they had identical thickness of the walls at the time. In the Correr museum in Venice a print from the 17th century

17. i 18. st. izrađuju se oba tipa boca pa se pretpostavlja da tada imaju jednaku debljinu stijenki. U muzeju Correr u Veneciji čuva se grafika iz 17. st. s prikazom uličnog prodavača stakla (slika 6), koji u dvije pletene košare nosi boce (Migliori 2001, 31). Čini se kako se u lijevoj košari nalaze boce ljevkastog i čunjastog grla, a u desnoj je jasno vidljiva boca s visokim čunjastim grlom, što nam pokazuje da su ove dvije skupine korištene barem jednim dijelom u isto vrijeme.

Ove boce skupine 2 zapravo prate razvoj novih oblika koji su se pojavili u zapadnoj Europi. Na brodolomu Drevine u Koločepskom kanalu pronađena je jedna cijela boca sličnog tipa (doduše svjetlozelena, s ravnim kraćim vratom i kosim ramenom, (Kisić 1982, Sl.13) koja se može usporediti s nalazima ove skupine. Taj je brodolom datiran u sam kraj 17. st., a mada sadrži nalaze muranskog stakla, dio tereta potječe iz sjeverozapadne Europe, gdje bi valjalo tražiti i porijeklo te boce.

I u Francuskoj se slične plavo-zelenkaste boce četverokutnog presjeka i užim čunjastim vratom datiraju od 1700. do 1780. g. (Losier 2012, fig.7). Sličnih su oblika i datacije i zelenkaste boce četverokutnog presjeka s izduženim čunjastim grlima, ali proizvedene *half-post* postupkom, pronađene u Osijeku (Horvat, Biondić 2007, 212, 213 itd.). Isto tako, možemo navesti veći broj zelenkastih boca

is kept depicting a street seller of glass (figure 6) carrying bottles in two wicker baskets (Migliori 2001, 31). It seems that bottles with funnel-shaped and skittle-shaped necks are in the left basket, and in the right one is a bottle with high skittle-shaped neck indicating that these two groups were used simultaneously at least for some time.

These bottles of group 2 actually follow the development of new forms which appeared in western Europe. On the Drevine shipwreck in Koločepski kanal a complete bottle of similar type was found (light green, with flat short neck and slanted shoulder, (Kisić 1982, fig.13) which can be compared to the finds of this group. This shipwreck was dated to the end of the 17th century. Though it offered some finds of the Murano glass, part of the cargo originates from north-western Europe where origin of this bottle should be looked for.

In France similar blue-greenish bottles with square cross-section and narrow skittle-shaped neck are also dated from 1700 to 1780 (Losier 2012, fig.7). Greenish bottles with square cross-section and elongated skittle-shaped neck from Osijek have similar form and dating but they were produced after using *half-post* procedure (Horvat, Biondić 2007, 212, 213 etc.). We can also mention a number of greenish bottles with body with square cross-section and

Slika 7. Brodska škrinja s lijekovima iz 18. st., Pomorski muzej u Dubrovniku (www.dumus.hr)
Figure 7. Ship chest with medicines from the 18th century, Museum of Naval History in Dubrovnik (www.dumus.hr)

četverokutnog presjeka tijela i kratkog grla pronađene u slojevima 17. i 18. stoljeća kompleksa srednjovjekovne mitropolije u Beogradu. Autori ove boce povezuju sa sjeverno-njemačkom i nizozemskom proizvodnjom boca (Popović, Bikić 2004, Sl.95, 146, 147). Poput osječkih primjera, i ove su boce, barem jedan njihov dio, proizvedene *half-post* postupkom te ne mogu biti, usprkos razmjerno sličnom obliku, istog radioničkog porijekla kao boce skupine 2. Na kraju, čini se kako je najbolji usporedni primjer boce iz brodske škrinje u Pomorskom muzeju u Dubrovniku (Slika 7, lijevo). Slična je po osnovnim karakteristikama jer je manjih dimenzija, tamnije zelene boje, četverokutnog tijela, ravna ramena i visokog čunjastog grla, a i prema dataciji u sredinu 18. st., odgovara našoj skupini 2.

Boce prve skupine pronađene su i u dijelovima na dvama novim, za sada neistraženim potencijalnim

short neck which were found in layers from the 17th and 18th centuries in a complex of medieval metropolis in Belgrade. The authors relate these bottles with northern German and Dutch bottle production (Popović, Bikić 2004, fig .95, 146, 147). Similar to examples from Osijek these bottles (or at least some of them) were produced by using *half-post* procedure and they cannot have the same workshop origin as the bottles of group 2. It seems that the best example for comparison was found in the ship chest in the Museum of Naval History in Dubrovnik (figure 7, to the left). It is similar in its basic characteristics as it is rather small, dark green, with square body, flat shoulder and high skittle-shaped neck. It corresponds to our group 2 also by dating.

Bottles of the first group were found in fragments on two new potential Modern Era shipwrecks which have not been excavated so far. The first shipwreck is on the western side of the islet of Samer near Rovinj (Bekić 2012b, 584). Big amount of old hand-made bricks were found there as well as a larger part of a plate with engraved green glazed ornament and upper part of a greenish bottle (192).

novovjekovnim brodolomima. Prvi je brodolom na zapadnoj strani otočića Samera kod Rovinja (Bekić 2012b, 584). Na njemu je nađena veća količina starog ručno rađenoga crijepa, veći dio tanjura s graviranim zelenim cakljenim ukrasom te gornji dio zelenkaste boce (192). Drugi brodolom nalazi se na hridima rta Uljeva kod Ližnjana, i označava se kao Uljeva C (Bekić 2013, 34). Na tom mjestu pronađeno je mnoštvo ručno izrađene opeke, manji ulomci keramike te pedesetak ulomaka stakla (264-283; 305-331), koji su bili dijelom barem desetak različitih posuda. Od toga većina otpada na dijelove jedne veće boce prve skupine (264 s pripadajućim odlomcima). Na osnovi keramičkih nalaza ovaj bi se potencijalni brodolom mogao datirati na prijelaz 17. u 18. st.[3] Oba potencijalna brodoloma bit će istražena iskopavanjima, ali već sada može se reći kako se vjerojatno radi o manjim drvenim jedrenjacima koji su služili za lokalnu plovidbu tijekom 17. i početkom 18. st. Uz boce s većeg brodoloma Drevine (Kisić 1982),

The second shipwreck is located on the cliffs of the cape Uljeva near Ližnjan and it is marked as Uljeva C (Bekić 2013, 34). At this spot abundance of hand-made bricks was found, smaller fragments of pottery and about fifty fragments of glass (264-283; 305-331), which belonged to at least ten different vessels. Most of these pieces belonged to a larger bottle of the first group (264 with belonging sherds). On the basis of pottery finds this potential shipwreck may be dated to transition from the 17th to 18th century.[3] Both potential shipwrecks will be excavated, but we can already say that these were probably smaller wooden sailboats used for local sailing during the 17th and beginning of the 18th century. Alongside bottles from the bigger shipwreck Drevine (Kisić 1982), these finds will help us in further investigations of typology of the first group.

In addition to bottles of these two groups there are also other bottles which can be related to them on the basis of some of their characteristics. Examples of bottles 53 and 65 are very

3 Zahvaljujem stručnjacima za novovjekovnu keramiku, Karli Gusar i Josipu Višnjiću, na preliminarnom određenju keramičkih nalaza s ovih brodoloma. Na žalost, do sada prikupljeni keramički ulomci nisu posebno vrijedni za dataciju, ali bi se na osnovi njih kao cjeline ovaj brodolom mogli datirati široko oko 1700. godine.

3 I would like to thank experts in the Postmedieval pottery, Karla Gusar and Josip Višnjić, for preliminary analysis of ceramic finds from these shipwrecks. Unfortunately collected pottery sherds are not helpful for precise dating, but this shipwreck may be broadly dated around 1700 on the basis of all pottery finds as a whole.

Slika 8. Neki pojedinačni oblici boca (Foto: L. Bekić)
Figure 8. Some individual bottle shapes (photo: L. Bekić)

ovi će nam nalazi pomoći u daljnjim istraživanjima tipologije prve skupine.

Osim boca ovih dviju skupina, postoje i druge boce koje se na osnovi nekih svojih karakteristika mogu povezati s njima. Vrlo su neobični primjerci boca 53 i 65 koji imaju čunjast i izdužen vrat, ali i bijelu traku apliciranu na otvor. Vjerojatno je riječ o nekom prijelaznom podtipu između skupina 1 i 2. Ovakvim bocama možda bi mogli pripadati i ulomci 56, 207 i 217.

Osim ovih, imamo i neke različite boce tanjih stijenki koje imaju duge vratove sa sasvim malo razvraćenim obodom (49, 50, 51, 220, 214) ili sasvim ravnim otvorom (75, 219, 215). Primjer boce s ravnim otvorom 215 ima vrlo dobru usporedbu s bocom nađenom u Klaipedi, Litva, a koja se datira u 16. st. (Šimkute 2011, Fig.7-

unusual as they have skittle-shaped and elongated neck, but also white band applied on the opening. Probably this was some kind of transitory subtype between the groups 1 and 2. Fragments 56, 207 and 217 may have belonged to such bottles.

There are also various bottles with thin walls and long necks with slightly everted rim (49, 50, 51, 220, 214) or quite flat opening (75, 219, 215). Example of a bottle with flat opening 215 has a very good analogy in a bottle found in Klaipeda, Lithuania, dated to the 16th century (Šimkute 2011, Fig.7-3). The author classifies this bottle together with the others which have a funnel-shaped opening and ascribes them to the northern German production (Šimkute 2011, 160).

We can also mention bottles with a damaged opening (54, 56, 70, 196,

3). Autor ovu bocu stavlja u skupinu s drugima koje imaju ljevkasti otvor i pripisuje ih sjevernonjemačkoj proizvodnji (Šimkute 2011, 160).

Tu se mogu spomenuti i boce koje imaju udarcima otučen otvor (54, 56, 70, 196, 218) pa nije jasno je li riječ o namjerno obrađenom otvoru ili naknadnom prilagođenu otvoru. One su različitih oblika, dimenzija i tonova, stoga ih je teško točnije grupirati.

Maslinastozelena boca 55 zatvorena olovnim čepom jedinstveni je primjerak u ovoj zbirci. Inače je rađena tehnikom ponovnog uranjanja već napuhane boce u novi sloj stakla (tehnika *half-post*) pa se spoj ovih dvaju slojeva očituje na ramenu boce. Ovaj postupak izrade upotrebljavao se u Austriji, Njemačkoj i Švicarskoj (Horvat, Biondić 2007, 131) pa možemo zaključiti kako je ova boca uvezena s tog područja. Primjetno je da su ove boce rjeđe na Jadranu, a češće u panonskim prostorima, što nam ukazuje na opskrbu tih prostora staklom iz središnje Europe. Zanimljivost je i da su na brodolomu uz hrid Sv. Pavao na Mljetu pronađene slične zelene boce, također izrađene tom tehnologijom. One se pripisuju otomanskoj proizvodnji kasnog 16. st. i to u radionicama u Konstantinopolu (Ferri 2014, 112).

Za ove pojedinačne primjerke boca ne može se sa sigurnošću reći kakvi su im bila tijela ili dna, međutim

218), so it is not clear whether this was an intentionally worked opening or opening which was adjusted subsequently. They vary in forms, dimensions and tones and therefore it is difficult to classify them more precisely.

Olive-green bottle 55 closed with a lead stopper is a unique example in this collection. It was made by using technique of repeated dipping of already blown bottle into a new layer of glass (*half-post* technique) so that connection of these two layers can be recognized on the shoulder of the bottle. This procedure was used in Austria, Germany and Switzerland (Horvat, Biondić 2007, 131) so we can conclude that this bottle was imported from that region. We can notice that these bottles are more frequent in the Pannonian region than on the Adriatic indicating that these regions imported glass from central Europe. It is interesting that similar green bottles made by using the same technique were found on the shipwreck near the cape Sv. Pavao on the island of Mljet. They were ascribed to the Ottoman production of the late 16th century, more precisely the Constantinople workshops (Ferri 2014, 112).

We cannot say much about bodies or bases of these individual examples of bottles, but in this collection there is a number of bases that do not belong to the bottles of described four groups.

Slika 9. Gornji dijelovi boca treće skupine (Foto: L. Bekić)
Figure 9. Upper parts of the bottles of the third group (photo: L. Bekić)

u ovoj kolekciji zastupljen je i veći broj dna koja ne pripadaju bocama opisanih četiriju skupina. Tako možemo predmnijevati kako su neke od ovih boca imale i izdužena dna s utisnutim kutovima (19) obla dna (21, 258, 254, 255), ali ne možemo isključiti i da su neka imala četverokutna ili šesterokutna dna.

Treća glavna skupina boce su s visokim uskim vratom i naglašenim zadebljanjem odmah ispod otvora. Ovo je zadebljanje izvedeno naknadno apliciranom staklenom trakom koja ponekad može biti nepravilno nanesena. Takve trake nanosile su

In that way we can assume that some of these bottles had elongated bases with impressed angles (19), rounded bases (21, 258, 254, 255) but it is also possible that some had square or hexagonal bases.

The third main group comprises bottles with high narrow neck and emphasized thickening directly under the opening. This thickening was made by subsequent application of a glass band which can occasionally be applied irregularly. Such bands were applied on narrow and high necks in order to reinforce their walls so that long stoppers can be inserted. These bands

se na uska i visoka grla kako bi im ojačala stijenka zbog umetanja dugih čepova. Također su te trake poslužile i kako bi se o njih vezala uzica koja je držala pokrov čepa. One su uglavnom tamnosmeđe boje s maslinastim tonom (198, 209, 212, 289, 319), ali mogu biti i bezbojne (48, 74, 206). Na žalost nisu poznati cijeli oblici ovih boca, ali sigurno su bile kružnog presjeka, tako da ih možemo povezati sa širokom skupinom tamnozelenih vinskih boca kakve se javljaju u zapadnoj Europi i ubrzo šire po cijelom svijetu.

I zadnja, četvrta skupina, boce su izrađene od bezbojnog stakla, s dužim vratom i obodom oblog obrnutog L profila, s oblim rubom oboda. One su najčešće velike (47, 73, 200, 203, 211, 213), ali ima i manjih (61, 205, 210, 216). Veće su očito imale kružni presjek tijela, dok su manje često ovalnog oblika. Prema oblicima možemo zaključiti kako su boce ove skupine korištene za razne namjene.

Ove druge dvije osnovne skupine mogu se datirati u još mlađe razdoblje od prethodnih dviju. Oblik boca naše treće skupine nije nam poznat u potpunosti, ali jasno je kako su im tijela bila kružnog oblika, a vratovi izduljeni, što je karakteristika koja se na vinskim bocama javlja sredinom 17. st. (Jones, Sullivan 1989, 73).

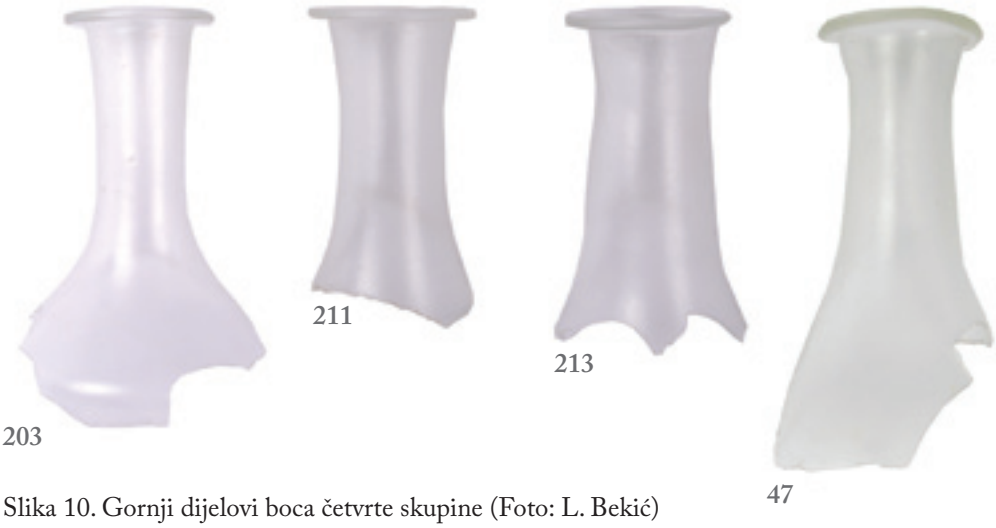
Ipak, treću skupinu na osnovi jedne tehničke karakteristike možemo razmjerno preciznije datirati. Naše

were also used to tie a string holding the plug cover. They were mostly dark brown with olive-green tone (198, 209, 212, 289, 319), but they can also be colourless (48, 74, 206). Unfortunately we do not know what the complete form of this bottle looked like, but they definitely had round cross-section so that we can relate them to a large group of „dark-green wine bottles" appearing in western Europe and spreading all over the world quite quickly.

The last, fourth group refers to bottles made of colourless glass, with longer neck and rim with rounded reversed L profile, and rounded rim edge. They are usually large (47, 73, 200, 203, 211, 213), but there are also smaller ones (61, 205, 210, 216). Larger evidently had round cross-section of the body, while the smaller ones often have oval form. On the basis of forms we can conclude that bottles of this group were used for various purposes.

These other two basic groups can be dated to even later period than the previous two. We have not fully reconstructed the form of the bottles of our third group, but it is clear that their bodies were round and necks elongated which is a characteristic appearing on wine bottles in the mid-17th century (Jones, Sullivan 1989, 73).

However the third group can be dated quite precisely on the basis of one technical characteristic. Our bottles have a subsequently applied glass



Slika 10. Gornji dijelovi boca četvrte skupine (Foto: L. Bekić)
Figure 10. Upper parts of the fourth group bottles (photo: L. Bekić)

boce imaju odmah ispod otvora naknadno apliciranu staklenu traku nepravilnog oblika i položaja. To je karakteristika vinskih boca koje su se proizvodile u razdoblju između 1650. i 1760. godine, kada se traka počela dodatno modelirati (Jones 1986, 33). Naime, trake su u početku aplicirane samo nanašanjem topljenog stakla oko grla te su imali kobasičasti oblik (*en boudin,* primjerice 212) da bi se kasnije provizorno oblikovao u blago trnasti (kao npr. 319). Tek u 19. st. ove se trake počinju formirati u valjkastom, plosnatom obliku, ali takvih primjera nema u ovoj zbirci. To nam svjedoče i primjeri iz francuskih kolonija, gdje su se slične boce trbušastog oblika koristile u drugoj polovini 17. st., ali su najčešće oblika tegle (*pot de fleurs*) i rabile su se tijekom 18. st. (Losier

band irregular in form and position immediately under the opening. This is a characteristic of wine bottles which were produced from about 1650s to 1760s when the band was additionally modelled (Jones 1986, 33). Namely in the beginning the bands were applied only by applying molten glass around the neck, and they had „sausage-like" shape (*en boudin,* as e.g. 212) which was later reshaped into slightly thorn-shaped form (such as e.g. 319). Only in the 19th century these bands started to be formed in cylindrical, flat shape, but there are no such examples in this collection. This is also attested by the examples from French colonies where similar squat bottles were used in the 17th century, but the ones in the shape of a flowerpot (*pot de fleurs*) are most frequent which were

2012, fig.3, 4, 6). Trbušaste boce ove skupine izrađuju se i u Belgiji od 1720. do 1750. g. i masovno se rabe u Nizozemskoj i Njemačkoj (Van den Bossche 2001, Pl.71, 72). Ipak treba naglasiti kako opisane tipološke značajke ne mogu biti u potpunosti pouzdane jer je na brodolomu St. George kod Thorsmindea u Danskoj pronađeno boca i s valjkastim, trnastim i kobasičastim trakama, a zna se da bi se one trebale datirati između 1785. i 1811. g. (Cooper 2012, fig. 13, 14).

Kod nas postoje neke analogije iz Osijeka gdje se takve boce datiraju u 18. st. (Horvat, Biondić 2007, 217), a i s brodoloma Drevine koji datira u sam kraj 17. i početak 18. st. (Kisić 1982, sl.17).

Boce četvrte skupine tehnički su bolje izrađene od prethodnih triju, i karakteristično je kako apsolutno prevladava bezbojno staklo. Mada je bezbojno staklo poznato stotinama godina prije, tek u 19. st postaje ponovno uvriježeno kod izrade svakodnevnih posuda poput boca. Tako je u francuskim kolonijama zapaženo kako plavo-zelene boce iz 18. st., u 19. st. zamjenjuju bezbojne, kojih se u cjelinama 18. st. uopće ne nalazi (Losier 2012, 166). Stoga se ova četvrta skupina najvjerojatnije može datirati najranije u drugu polovinu 18., a uglavnom u 19. st. Boce valjkastog tijela s Γ obodom izrađivane su i u tamnim tonovima u Njemačkoj od

used during the 18th century (Losier 2012, fig. 3, 4, 6). Squat bottles from this group were produced in Belgium from 1720 to 1750 and used widely in Netherlands and Germany (Van den Bossche 2001, Pl.71, 72). However we need to emphasize that described typological characteristics cannot be completely reliable as there were bottles with cylindrical, thorn-shaped and sausage-like bands found on the shipwreck St.George near Thorsminde in Denmark, and we know that they should be dated from 1785 to 1811 (Cooper 2012, fig. 13, 14).

There are some analogies from Osijek where such bottles are dated to the 18th century (Horvat, Biondić 2007, 217), and from the Drevine shipwreck which is dated to the end of the 17th and beginning of the 18th century (Kisić 1982, fig.17).

Bottles of the fourth group exhibit more quality in technical terms than the previous three groups. Colourless glass is absolutely dominant. Although colourless glass was known for hundreds of years, it became common in production of everyday vessels such as bottles only in the 19th century. In the French colonies blue-green bottles from the 18th century were replaced with colourless ones in the 19th century, which were not represented in the 18th century units (Losier 2012, 166). Therefore this fourth group can most probably be dated to the second

1820.-1850. g., dok su se tada u Austriji iste proizvodile od sasvim bezbojnog stakla (Van den Bossche 2001, Pl.212). Isto je bilo i u Slovačkoj, što se zorno vidi iz primjera na slici 38.

Uz ove četiri skupine najčešćih oblika, u ovoj zbirci staklenih predmeta pronađu se i mnogi izuzetci i jedinstveni primjerci.

Boca koje se mogu ranije datirati od ovih četiriju iz navedene skupine nema mnogo. To su uglavnom dijelovi boca koje su imale okrugli presjek, odnosno globularno tijelo i visoko usko grlo s blago razvraćenim obodom. Tako možda najstarijoj boci u ovoj zbirci pripada gornji dio boce bezbojnog stakla 187 s Velog Škoja kod Pakoštana koja ima razvraćeni otvor, dugi vrat i na njemu jedno manje prstenasto zadebljanje. Najsličniji je nalaz nađen u Zadru u samostanu sv. Krševana (Grisogona) (Pešić 2006, Fig.11) a autor ih pripisuje skupini boca tipa *Inguistare* ili *Ingastare* i datira od 13. do 15. st. Dvije slične boce mogle su se vidjeti i na izložbi *Sotto Le Tavole Di Maltesta* (br.3) gdje se datiraju u 14./15. st.

Tu treba navesti i dno boce blago smećkastog tona, na visokoj stopi sa šuplje zadebljanim krajevima koje je pronađeno na Selinama, 204. Ovo je također jedna slična boca, a usporedba se može pronaći u Muzeju u Ninu gdje su takva dna potpisana kao boce tipa *Inguastara* i datirane od 14. do 17. st.

half of the 18th century at the earliest, and for the most part to the 19th century. Bottles with cylindrical body and Γ rim were made in dark tones in Germany from 1820 to 1850, while identical bottles in Austria were made of colourless glass (Van den Bossche 2001, Pl.212). The situation was identical in Slovakia which is evident from the example on figure 38.

There are also many exceptions and unique examples in this collection of glass objects alongside these four groups of the most common forms.

There are not many bottles which can be dated earlier than the ones from the four mentioned groups. These are mainly fragments of bottles which had round cross-section, i.e. globular body and high narrow neck with slightly everted rim. In that way possibly the oldest bottle in this collection is represented by the upper part of a bottle made of colourless glass number 187 from Veli Škoj near Pakoštane which has an everted opening, long neck and a smaller thickening on it. The most similar find was found in Zadar in the monastery of St. Krševan (Grisogono) (Pešić 2006, Fig.11), and the author ascribes them to a group of bottles of the *Inguistare* or *Ingastare* type, dated from the 13th to 15th centuries. Two similar bottles could have been seen on the exhibition *Sotto Le Tavole Di Maltesta* (no.3) where they are dated to the 14th/15th centuries.

Nađena je jedna boca tipa *Angastarie* i na Bribiru (Delonga 1987, T.XII-1-6). U Sloveniji ih ima, primjerice, u Celju (Lazar 2001, kat.83). Isto dno nađeno je i predvorju kraljevske palače u Budi u Mađarskoj i pripisuje se venecijanskoj proizvodnji 14/15. st. i tipu *Inghistere* (Gyürky 1987, 54, 56, Abb.10.1). Boce tipa *Ingastara* 15./16. st. iz Srbije koje donosi Bikić nemaju visoke stope (Bikić 2006, Fig.4-6; Fig.5-8,3).

I gornji dio bezbojne boce 17 dugog grla s kosim naborima prema nekim se karakteristikama može pripisati opisanim bocama i datirati u 14./15. st., međutim sačuvan je samo manji dio pa je to za naš primjerak neizvjesno. Treba također napomenuti kako se boce tankih stijenki, s dugim vratom i blago razvraćenim otvorom javljaju i kasnije. Tako su vrlo slične boce pronađene i na Gnaliću (Lazar, Willmott 2006, S20, fig.68, i druge) koji se može datirati u kasno 16. st. ali i na brodolomu Ratac (rt Ratac na Koločepu, Radić-Rossi 2012, sl.36) koji autorica datira u 17. st.

Grlo boce 206 sa Selina prema svom karakterističnom obliku vjerojatno je pripadalo bikoničnoj boci, kakve su česte u srednjoj Europi. U Hrvatskoj su još nađene i u Bribiru gdje se datiraju od 14. do 16. st. (Delonga 1987, T.XIII). Slična grla ovih boca pronađena su i u Celju, gdje se datiraju u 16.st. i pripisuju ljubljanskim radionicama (Lazar 2001,

We also need to mention base of a bottle of light brownish tone, on a high foot with hollow and thickened ends which was found on Seline, 204. This is another similar bottle, and the comparison can be found in the Museum in Nin where such bases were signed as bottles of the *Inguastara* type and dated from the 14th to 17th centuries. Bottle of the *Angastarie* type was found on Bribir (Delonga 1987, T.XII-1-6). In Slovenia they were found e.g. in Celje (Lazar 2001, kat.83). Identical base was found in the atrium of the royal palace in Buda in Hungary and ascribed to the Venetian production of the 14th/15th centuries and the *Inghistere* type (Gyürky 1987, 54, 56, Abb.10.1). Bottles of the *Inghistere* type from the 15th/16th centuries from Serbia published by Bikić do not have high feet (Bikić 2006, Fig.4-6; Fig.5-8,3).

Upper part of the colourless bottle 17, with long neck and slanted folds could be ascribed to mentioned bottles on the basis of some characteristics and dated to the 14th/15th centuries. However this is not helpful in the case of our example as only a small part was preserved. Bottles with thin walls, long necks and slightly everted opening also appear later on. Similar bottles were found on Gnalić (Lazar, Willmott 2006, S20, fig.68, and others) which can be dated to the late 16th century, but also on the Ratac shipwreck (cape Ratac on Koločep, Radić-Rossi 2012,

Slika 11. Pojedinačni primjerci starijih boca (Foto: L. Bekić)
Figure 11. Individual examples of older bottles (photo: L. Bekić)

79, kat.107-110). Primjer ovakva grla postoji na dvorcu Polhovega Gradca u Sloveniji (Železnikar 2002, T.2-5). Ovo grlo, kao i druge bikonične boce, datira se u tamošnju fazu Va, odnosno sredinu 17. st. i također pripisuju ljubljanskim staklanama, a zanimljivo je i da je vlasnik jedne od tih staklana bio i vlasnik ovog dvorca (Železnikar 2002, 329, 333). Bikoničnih boca ima i u Srbiji u Prijepolju i Beogradu (Bikić 2006, Fig.4-3; Fig.5-10).

Zelena boca zakošenog oboda (226) zbog vrlo velikih dimenzija najvjerojatnije je demižon (*Dame-jeanne* ili *Demijohn*) odnosno bocolika posuda koja može imati zapreminu od 20 do 60 litara. Prema izradi vjerojatno je kasniji proizvod, 19. ili 20. st. Tamnozelene je boje i ulomak globularne posude debljih stijenki

fig. 36) which was dated to the 17th century by the author.

Neck of the bottle 206 from Seline probably belonged to a biconical bottle which were frequent in central Europe. In Croatia they were also found in Bribir where they were dated from the 14th to 16th centuries (Delonga 1987, T.XIII). Similar necks of these bottles were found in Celje where they were dated to the 16th century and ascribed to the Ljubljana workshops (Lazar 2001, 79, kat.107-110). Example of such neck was found in the castle Polhov Gradac (Železnikar 2002, T.2-5). This neck as well as other biconical bottles are dated to the phase Va, i.e. mid-17th century and are also ascribed to the Ljubljana glass workshops, and it is interesting that the owner of one of these glass workshops was also the

(304) pronađen u uvali Soline kod Rovinja. Vjerojatno je to dio globularne bočice koja se datira u 17. st., i kakva je pronađena na nalazištu brodoloma kod Koločepa (Medici 2010, Ib. 89).

Najmanja bočica ujedno je i najzanimljivija (241). Sačuvana je gotovo u cijelosti, ali joj nedostaje vrh. Izrađena je pomalo nepravilno, plosnata tijela, a na dvije šire strane ima plitkim brušenjem urezanu biljku. Vrlo vjerojatno riječ je o nekoj vrlo posebnoj tekućini napravljenoj od ilustrirane biljke. S obzirom na urezani ukras i oblik, možemo predmnijevati kako je bočica izrađena kasno u 18. st. ili tijekom 19. st. To nam potvrđuje i nalaz šest takvih bočica s

owner of this castle. (Železnikar 2002, 329, 333). There are biconical bottles in Serbia in Prijepolje and Beograd (Bikić 2006, Fig.4-3; Fig.5-10).

Green bottle with slanted rim (226) was probably a demijohn (*Dame-jeanne*) i.e. bottle-shaped vessel which can have capacity from 20 to 60 liters. Judging from its production characteristics it is probably somewhat later product, from the 19th or 20th centuries. Fragment of a globular vessel with thick walls which was found in the bay of Soline near Rovinj is also green in colour. It is possible that it was a part of small globular bottle which is dated to the 17th century and found at the site of the shipwreck near Koločep (Medici 2010, Ib. 89).

Slika 12. Bočica 241 s urezanim motivom razlistane biljke (Foto & crtež: L. Bekić)
Figure 12. Small bottle 241 with incised motif of a plant in leaf (photo & drawing: L. Bekić)

brodoloma St.George koji je pred zapadnom danskom obalom potonuo početkom 19.st. (Cooper 2012). Taj je brod opremljen i porinut 1785 .g. a potonuo je 1811. g. I mala obla bočica 78 prema svemu sudeći služila je za neki lijek i mogla bi se datirati u rano 20. st.

Četvrtaste boce i početak industrijske proizvodnje

U ovoj zbirci prisutno je i nekoliko donjih dijelova uskih boca četverokutnog presjeka, tamnozelene boje (193, 197, 284). Promjer tijela pronađenih primjeraka u rasponu je od 42 do 48 mm. Ove boce debljih stijenki izrađivane su puhanjem u kalup i korištene su načelno za piće i ulje.

Na osnovi nekih gornjih dijelova tih boca (195, 201) možemo zaključiti kako ih je dosta služilo za višnjin liker, poznati zadarski *Maraschino*. S obzirom na ono što se zna o proizvodnji Maraskina, ovakve boce proizvođene su tijekom 19. st., sve do početka 20. st.

Dvije boce imaju na ramenu apliciran stakleni pečatni otisak s grbom i natpisom. Tako na ulomku 201 vidimo dvoglavog okrunjenog austrijskog orla i čitamo ● FABB. MARASCHINO M. MAGAZZIN ● ZARA. Na drugom ulomku, u sličnom pečatu s dvoglavim

The smallest bottle is also the most interesting (241). It is preserved almost completely, only its tip is missing. It is a bit irregular, with flat body, and on two wider sides it bears a plant shallowly incised by polishing. Most likely it contained special liquid made of illustrated plant. Considering incised ornament and form, we can assume that the bottle was made late in the 18th or during the 19th century. This is confirmed by a find of six such small bottles from the shipwreck St. George which sank in front of the western Danish coast at the beginning of the 19th century (Cooper 2012). This ship was equipped and launched in 1785 and she sank in 1811. Small rounded bottle 78 probably also contained some medicine and it could be dated to the early 20th century.

Square bottles and beginning of industrial production

In this collection there are several lower parts of narrow bottles with square cross-section, in dark green colour (193, 197, 284). Diameter of bodies of recovered examples varies from 42 to 48 mm. These bottles with thick walls were made by mold blowing and used mainly for drinks and oil.

On the basis of certain upper parts of these bottles (195, 201) we can conclude that many such vessels were used for cherry liqueur, famous

Slika 13. Dijelovi boca tipa Maraskino (Foto: L. Bekić)
Figure 13. Fragments of the Maraschino type bottles (photo: L. Bekić)

okrunjenim austrijskim orlom (195), stoji natpis u vanjskom krugu ● I. E. PRIV. FABBRICA ● ZARA, a u unutarnjem krugu DI ANT. COSMACENDI. Još jedan spomen proizvođača nalazimo na natpisu prenesenom na dno boce pomoću kalupa (197). Natpis se čita kao L MILLICICH LIC a podrazumijeva poznatog proizvođača Maraskina Luku Miličića.

Jedna veća zelenkasta boca Maraskina kružnog presjeka (202) proizvedena je vjerojatno pedesetih godina 20. st. i ujedno je najmlađi izložak ove zbirke. Boca je označena natpisom MARASKINO - 1821 - ZADAR u reljefnom krugu i izrađena u dvodijelnom kalupu. Godina u ovom slučaju samo asocira na tradiciju proizvodnje kompanije Luxardo, koja je osnovana te godine

Maraschino of Zadar. Taking into consideration information about the production of Maraschino, such bottles were produced during the 19th century, until the beginning of the 20th century.

Two bottles have glass stamp imprint with a coat of arms and inscription. On fragment 201 we can see double-headed crowned Austrian eagle and read ● FABB. MARASCHINO M. MAGAZZIN ● ZARA. On the other fragment, in a similar stamp with double-headed crowned Austrian eagle (195) there is an inscription in the outer circle ● I. E. PRIV. FABBRICA ● ZARA and in the inner circle DI ANT. COSMACENDI. Another mention of the producer can be found on the inscription transferred to the bottle base by a mold (197). The inscription is

195

201

202

197

Slika 14. Pečati "Maraskino boca" (Foto: L. Bekić)
Figure 14. Stamps of the „Maraschino bottles" (photo: L. Bekić)

i proizvodila u svojim pogonima do Drugog svjetskog rata.

Ovakve su boce Maraskina inače tražene među kolekcionarima antiknog stakla, pa se počesto pronalaze na aukcijskim mrežnim stranicama. Što se datacije tiče, dva primjerka boca bez pečata, 193 iz uvale Lone te 284 iz uvale Vodenjak imaju na dnu tzv. *pointil scar*, odnosno tragove reza koji je nastao prilikom odvajanja željezne šipke za pridržavanje stakla. To znači

read as L MILLICICH LIC referring to a famous Maraschino producer Luka Miličić.

A larger greenish Maraschino bottle with round cross-section (202) was produced probably in the 1950s and it is the youngest exhibit in this collection. The bottle bears an inscription MARASKINO - 1821 – ZADAR in a relief circle and it was made in a two-partite mold. Year in this case refers only to production

201

Slika 15. Maraskino boca tvrtke *M.Magazzin* (Foto: L. Bekić)
Figure 15. Maraschino bottle of the *M.Magazzin* company (photo by: L. Bekić)

da su ovi primjerci bili ručno izrađeni i time su vjerojatno stariji od oko 1850. g. Primjerci 197 i 201 nemaju tih tragova, pa je tu vjerojatno riječ o strojnoj serijskoj proizvodnji u kalupima, nakon 1850. g. I sami reljefni otisci kalupa sa slovima i općenito takvo označavanje proizvoda, karakteristično je već za doba industrijske revolucije i koristi se na bocama do danas.

tradition of the Luxardo company which was founded in that year and it produced Maraschino in its facilities until the Second World War.

Such bottles of Maraschino are highly esteemed among the collectors of antique glass so they can often be found on the web pages with auctions. As for dating, the first two examples of bottles without stamp, 193 from the bay of Lone and 284 from the bay of Vodenjak have *pointil scar* on the base i.e. traces of a cut which resulted from removing iron rod for holding glass. This means that these examples were hand-made indicating they were probably older than 1850. Examples 197 and 201 bear no such traces indicating to possible machine serial production in molds, after 1850. Relief imprints of molds with letters and generally such marking of products is characteristic of the time of industrial revolution and it is used on bottles to the present day.

Another stamp (303) with incomplete inscription ROMANO / ZARA / VLAHOV which once stood on the bottle is similar to the mentioned ones as aromatic drinks of that company were also distilled in

303

Slika 16. Dio pečata proizvođača Vlahova (Foto: L. Bekić)
Figure 16. Part of a stamp of the producer Vlahov (photo: L. Bekić)

Još jedan pečat (303) s krnjim natpisom ROMANO / ZARA / VLAHOV koji je nekada stajao na boci, srodan je navedenima jer su aromatična pića te tvornice također destilirana u Zadru. Ovaj bi se pečat prema svemu moga pripisati zadnjoj četvrtini 19. st.

Tehnički vrlo kvalitetno izrađena boca od bezbojnog stakla pronađena je kod Ližnjana (194). Kružnog je presjeka i dužeg uskog vrata, s karakterističnim zadebljanjem oboda. Boce ovakvog oblika nazivaju se generičkim imenom *Castor Oil*, a u njima su uglavnom prodavane ljekarije koje su navodno liječile svakakve bolesti. Njihova uporaba bila je na vrhuncu na prijelazu iz 19. u 20. st.

Zadar. Therefore this stamp could be ascribed to the last quarter of the 19th century.

A very quality bottle in technical terms made of colourless glass was found near Ližnjan (194). It has a rounded cross-section and long narrow neck with characteristic thickening of the rim. Bottles in this shape are referred to by a generic name *Castor Oil*, allegedly containing medicines which cured all kind of diseases. Their use blossomed at the transition from the 19th to 20th century. Our example bears on the body a vertical relief inscription FLORIDA WATER / MURRAY & LANMAN / DRUGGISTS / NEW YORK and number 7 on the base. This indicates that favourite unisex perfume worn by men and women alike at the time, particularly in barber-shops was kept in the Ližnjan bottle. Having in mind legend about the fountain of youth in Florida, this water was believed to have healing characteristics. Murray and Lanman packed „Florida water“ in *castor oil* bottles from around 1857 to around 1871 (Sullivan 1994, 87-89).

Slika 17. Boca *Florida water* iz Ližnjana (Foto: L. Bekić)
Figure 17. Bottle of *Florida water* from Ližnjan (photo: L. Bekić)

194

Naš primjerak na svojem tijelu nosi okomito postavljen reljefni natpis FLORIDA WATER / MURRAY & LANMAN / DRUGGISTS / NEW YORK i na dnu broj 7. To upućuje kako se u ližnjanskoj bočici nalazio tada omiljeni uniseks parfem koji su koristile žene ali i muškarci, posebice u brijačnicama. S obzirom na legendu o fontani mladosti na Floridi, ovoj vodi pripisivana su i ljekovita svojstva. Murray i Lanman floridsku su vodu pakirali u *castor oil* bočice od oko 1857. do oko 1871. g. (Sullivan 1994, 87-89).

Čepovi za boce

Boce i slične posude su u razdoblju 16.-19. st. zatvarane plutenim i staklenim čepovima, izuzetno i nekim metalnim čepovima (Jones, Sullivan 1989, 149-167; Radić-Rossi 2012, Sl.36). Što se boca iz ove zbirke tiče, možemo pretpostaviti kako su boce uglavnom zatvarane plutenim čepom koji se utiskivao u grlo boce. Naime nije pronađen niti jedan stakleni čep, te gotovo niti jedan metalni čep na ovim

Bottle stoppers

In the period from the 16th to 19th centuries bottles and similar vessels were closed with various cork and glass stoppers, exceptionally with some metal stoppers (Jones, Sullivan 1989, 149-167; Radić-Rossi 2012, fig.36). As for the bottles from this collection, we can assume that the bottles were mostly closed with cork stoppers which were inserted into the neck of the bottle. There were no glass stoppers and almost no metal stoppers

nalazištima.[4] Pluteni čepovi proizvodili su se od drveta *Quercus Suber* koje je raslo u Portugalu i Španjolskoj. Početkom njihove uporabe u 16. i 17. st., u tim se zemljama razvila cijela industrija proizvodnje pluta kako bi se tržište namirilo tom sirovinom za izradu čepova (Jones, Sullivan 1989, 149).

Boca 55 zatvorena je metalnim čepom, tako da je jedan dio uglavljen u grlo boce, a drugi manji dio na njemu. Ovakvo zatvaranje boca često je kod tirolskih boca iz 17. i 18. st. (Baumgärtner 1977, kat.78-83, 86-89, itd.). Manja cink kapica navijala bi seu

Slika 18. Boca s metalnim čepom (Foto: L. Bekić)
Figure 18. Bottle with a metal stopper (photo: L. Bekić)

on these sites.[4] Cork stoppers were made of wood *Quercus Suber* which grew in Portugal and Spain. In the beginning of their use in the 16th and 17th centuries in these countries an entire industry of production of cork developed to provide the market with raw material for making stoppers (Jones, Sullivan 1989, 149).

Bottle 55 is closed with a metal stopper so that a part of it was inserted into the neck of the bottle and the other smaller part is on it. Such procedure is common on the bottles from Tyrol from the 17th and 18th centuries (Baumgärtner 1977, kat.78-83, 86-89, etc.). Smaller zinc cap would be screwed into a larger zinc which was fastened permanently on the bottle (*Zinnnschraubversluß*). But this bottle

4 Kositreni čepovi poput onih pronađenih kod Savudrije (Gluščević 2006, 11, Fig.2-1), nisu zatvarali staklene boce, već kositrene cilindre u kojima se nalazio balzam zvan *Teriaca*, a koji se proizvodio u brojnim ljekarnama u Veneciji u 17. st. Osim brojnih čepova s natpisom TERI ACA·F·ALLA·TESTA·D'ORO·IN·VE NET koje je pronašao Davor Milošević kod Savudrije, i mi smo pronašli kod Ližnjana kositreni čep terijaka masti koja je izrađivana u ljekarni *Al ponte* u Veneciji.

4 Tin stoppers such as the ones found near Savudrija (Gluščević 2006, 11, Fig.2-1), did not close glass bottles but tin cylinders which contained balm called *Teriaca* produced in many pharmacies in Venice in the 17th century. In addition to many stoppers with an inscription TERIACA ·F·ALLA·TESTA·D'ORO·IN·VENET found by Davor Milošević near Savudrija, we also found a tin stopper of the Teriaca balm made in the pharmacy *Al ponte* in Venice near Ližnjan.

veći cink dio koji je bio fiksno pričvršćen na bocu (*Zinnnschraubversluß*). No ova boca inače ne nalikuje tim tirolskim bocama, mada su i one napravljene u *half-post* tehnici.

Čaše, kaleži i pehari

U skupini posuda iz kojih se pije, treba razlikovati dvije glavne podskupine. To su čaše sa stopom - kaleži, čaše bez stope te pehari - veće čaše na nižoj stopi.

Za dijelove nožica s punim, kuglastim, zadebljanjima (11, 13, 14, 12, 87, 88) može se reći da su pripadale ranijim tipovima čaša, vjerojatno iz 16. st. Neki primjerci imali su noge u obliku šupljeg plašta, kao čaša 14, za koju se na vrlo slabo sačuvanom gornjem dijelu vidi da je imala široki rebrasti ukras čaške. Rebrasti ukras imale su i srodne čaše 6 i 12, dok su čaše 11 i 13 imale ravne površine čaške. Sve ove čaše slične su skupini čaša S3 s Gnalića gdje su zastupljene i čaše reljefne i glatke površine (Lazar, Willmott 2006, Pl.2, 139). Tu se mogu pribrojiti i vrlo usitnjeni komadi čaša na nozi iz Veštra (87, 88), no o njima se ne može više reći.

Ostatci vrlo raskošno ukrašene čaše na nozi pronađeni su u luci Veštar (85, 86). Staklo je bezbojno, u venecijanskom stilu *a cristalla*, a plavim staklom aplicirani su ukrasi. Tehnika takva ukrašavanja zvala se

is not similar to the Tyrol examples though they were also made by using *half-post* technique.

Beakers, chalices and goblets

In the group of drinking vessels we need to distinguish between two main subgroups. These are beakers with a foot – chalices, beakers without a foot and goblets – higher beakers on a lower foot.

Parts of feet with full, globular thickenings (11, 13, 14, 12, 87, 88) probably belonged to earlier types of beakers, most likely from the 16th century. Some examples had hollow feet as the beaker 14 which had wide ribbed decoration evident on poorly preserved upper part. Ribbed decoration also appears on similar beakers 6 and 12, while beakers 11 and 13 had flat surfaces of the upper part. All these beakers are similar to a group of beakers S3 from Gnalić where there were beakers with relief or flat surface (Lazar, Willmott 2006, Pl.2, 139). We can also add some very fragmented pieces of beakers on foot from Veštar (87, 88) but little can be said about them.

Remains of a very elaborately decorated beaker on foot were found in the port of Veštar (85, 86). The glass is colourless, in the Venetian style *a cristalla*, and decorations are applied with blue glass. Such decoration

Slika 19. Čaše sa uskom nogom i stopom (Foto: L. Bekić)
Figure 19. Beakers with a narrow foot and ring base (photo: L. Bekić)

a filigrana. Prema nekim sačuvanim muzejskim primjercima možemo zaključiti kako je izduženi dio poput zmajeva repa okomito povezivao nogu čaše s gornjim dijelom, dok se druga plava traka nalazila vodoravno postavljena na donjem dijelu čaške. Ovakve čaše izrađivane su različitim izvedbama tijekom 17. i 18. st. i to u Veneciji na Muranu (*ad alette*), ali i u Nizozemskoj prema venecijanskom

technique was called *a filigrana*. On the basis of some preserved museum examples we can conclude that the elongated part resembling „dragon's tail" connected vertically foot of the beaker with the upper part while other blue band was placed horizontally on the lower part of the upper segment. Such beakers were made in different variants in the 17th and 18th centuries in Venice on Murano (*ad alette*), and also

stilu, to jest *façon de Venise*. U sjevernoj Europi ovakve su čaše nazivali *Flügelglas* ili *Dragonglas* jer su zmajevi repovi ili krila bili postavljeni na suprotnim stranama pa je tako noga čaše izgledala kao da ima krila. Ova dva ulomka pripadala su možda istoj čaši, a u svakom slučaju spadaju u produkciju 17. st. Dijelovi takvih čaša kod nas su pronađeni na brodolomu Drevine iz kraja 17. st. (Kisić 1982, Sl.21,22).

Vjerojatno je peharima pripadao gornji dio posude 9 sa Selina. Na obodu ima apliciranu bezbojnu staklenu traku u kojoj je isprepletena bijela nit. Ovu tehniku, zvanu *zanfirico* (kasnije i drugi načini isprepletanja:

in Netherlands after the Venetian style i.e. *façon de Venise*. In northern Europe such beakers were called *Flügelglas* or *Dragonglas* since dragon's tails or wings were placed on the opposite sides so that the beaker foot looked like having wings. These two fragments may have belonged to the same beaker and they definitely belong to the 17th century production. Fragments of such beakers were found in Croatia on the Drevine shipwreck from the end of the 17th century (Kisić 1982, fig.21,22).

Upper part of the vessel 9 from Seline probably belonged to goblets. On its rim it has an applied colourless glass band in which white thread was intertwined. This technique known as *zanfirico* (later on

Slika 20. Ulomci *Flügelglas* čaše iz Veštra i primjer takve cjelovite čaše (Foto: L. Bekić)
Figure 20. Fragments of *Flügelglas* beaker from Veštar and an example of a complete beaker of the same type (photo: L. Bekić)

Slika 21. Pehari na širim nogama i stopama (Foto: L. Bekić)
Figure 21. Goblets on a wide foot and ring base (photo: L. Bekić)

a retori, a reticello itd.) uveo je u muransko staklarstvo Filippo Catani 1527. g. Takvo ukrašavanje oboda nalazi se i na obodu zdjele s Gnalića (Lazar, Willmott 2006, fig.44). Još dva primjerka imaju sličan ukras, s time što je na obodima ovih čaša ili pehara aplicirana neprozirna bijela staklena traka (97, 324), poput onih na bocama 1B skupine.

Dio pehara iz Pakoštana (188) može se prema kapljičastom ukrasu prenesenim kalupom datirati u 16. st. Slično ukrašavanje zastupljeno je i na

there were other manners of intertwining: *a retori, a reticello*, etc.) was introduced in the Murano glassmaking by Filippo Catani in 1527. Such decoration of the rim can be found on the rim of a small bowl from Gnalić (Lazar, Willmott 2006, fig.44). Two more examples have similar decoration, but on these beakers or goblets there is an opaque white glass band applied on the rim (97, 324), such as the ones on the bottles of group 1B.

Some of goblets from Pakoštane (188) can be dated to the 16th century on the basis of drop-shaped ornament

Gnaliću (Lazar, Willmott 2006, fig.20) i na dnima nekih posuda koje izgledaju kao zdjelice, 81 i 82 iz Veštra i 248 sa Selina. Tu valja spomenuti više slično ukrašenih čaša s uvučenim dnom koje se datiraju u 17.st. iz Portugala (Ferreira, Medici 2010, Fig.8). Na žalost usitnjenost pronađenih ulomaka ne dopušta točnije odrediti oblik posude.

Donji dijelovi vrlo različitih pehara i zdjela pronađeni su na Selinama, ali o njihovu točnom obliku ne može se više reći (7, 8, 15, 242) pa je tako moguće i da su neki od ovih donjih dijelova pripadali zdjelicama.

Ostali primjerci već se mogu ubrojiti u čaše. Možda najstarija čaša pronađena je na Selinama (18). Velike čaše s bradavičastim ukrasom nazivaju se *Krautstrunk* ili *Nuppenbecher* (ovisno o obliku), a bile su vrlo popularne u srednjoj Europi. Proizvodile su se u tamošnjim brojnim "šumskim staklanama" od 14. do 17. st. U nas su u priobalnom području rijetke, ali su pojedini primjerci pronađeni u Zadru i Dvigradu (Fadić 1985) te kaštelu Žminj (Bekić 2009, slika na s. 400).

Velik broj čaša izrađen je od svjetloljubičastih tonova, a razmjerno su slične u oblicima. Za ovakve čaše nema nikakvih analogija u dostupnoj literaturi i nalazima. Nekoliko ljubičastih čunjastih čaša ima nisku

made by mold. Similar decoration was found on Gnalić (Lazar, Willmott 2006, fig.20). Bases of some vessels which resemble small bowls were decorated in a similar manner, numbers 81 and 82 from Veštar and 248 from Seline. We also need to mention several beakers with concave base from Portugal decorated in a similar manner dated to the 17th century (Ferreira, Medici 2010, Fig.8). Unfortunately fragmented state of recovered fragments prevents reconstruction of precise form of the vessel.

Lower parts of various goblets and bowls were found in Seline, but little can be said about their exact form (7, 8, 15, 242) so that it is possible that some of these lower parts belonged to small bowls.

Remaining examples can be classified as beakers. Possibly the oldest beaker was found on Seline (18). Large beakers with knob-like decoration are called *Krautstrunk* or *Nuppenbecher* (depending on the form). They were very popular in central Europe. They were produced in numerous „wood glassworks" from the 14th to 17th centuries. They are not frequent in our coastal region, but there were individual finds in Zadar and Dvigrad (Fadić 1985) and castle Žminj (Bekić 2009, figure on p. 400).

Large number of beakers was made in light purple tones, and they are quite similar in forms. There are no analogies for such beakers in available works and finds. Several skittle-

18

Slika 22. Dio *Krautstrunk* čaše s rta Selina kod Pule (Foto: L. Bekić)
Figure 22. Part of a *Krautstrunk* beaker from cape Seline near Pula (photo: L. Bekić)

stopu, iz koje se neprekinuto nastavlja gornji dio tijela - čaška. To su ljubičaste čaše 3, 232 i 236. Valja zapaziti da su mada naizgled iste, međusobno različite u unutrašnjosti na način da primjerak 232 ima najviše ispupčeno dno prema gore, 236 samo djelomično dok čaša 3 ima sasvim ravno dno u unutrašnjosti. Po vanjštini izgledaju posve slične i očito su namijenjene da budu u kompletu. Možda ih se može datirati u prvu polovinu 18. st. jer su čaše na niskoj stopi popularne u to vrijeme (Horvat, Biondić 2007, 129)

Čunjaste čaše bez stope iz ove skupine možda su nešto mlađe jer takve oblike uglavnom možemo datirati u 18. st. Među njima, najčešće su čaše debelog dna i tankih stijenki, ljubičastih tonova (4, 230, 231, 233, 234, 235, 288).

shaped purple beakers have low ring base from which upper part of the body grows. These are purple beakers 3, 232 and 236. Although they appear to be identical, there are differences in the interior so that the example 232 has the most concave base, 236 only partially while beaker 3 has completely flat base in the interior. On the outer side they look very similar and they were evidently meant to be a set. Perhaps they can be dated to the first half of the 18th century as beakers on a low ring base were popular at the time (Horvat, Biondić 2007, 129).

Skittle-shaped beakers without a ring-base may be somewhat younger as similar forms can be dated to the 18th century. Most common such forms include beakers with thick bases and thin walls, in purple tones (4, 230, 231, 233, 234, 235, 288). Seemingly identical, they differ in the angle of obliquity of walls and the purple tone. Colour tones are not important in the glass production as producers of the time could not prepare identical mixture every time so that final tone of glass depended on micro-admixtures of oxides. However persistence in

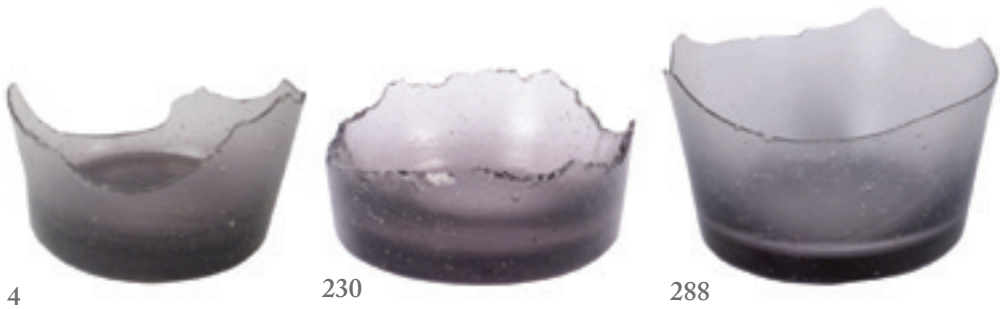
Slika 23. Ljubičaste čaše na niskoj stopi (Foto: L. Bekić)
Figure 23. Purple beakers on a low foot (photo: L. Bekić)

Naizgled iste, razlikuju se donekle u kutu kosine stijenke, kao i tonu ljubičaste boje. Tonovi boje nemaju neku važnost kod izrade stakla jer je proizvođačima onog vremena bilo teško svaki put pripremiti istu smjesu pa je tako ovisno o mikroprimjesama oksida ovisio krajnji ton stakla. Ipak, ustrajnost u korištenju smjese koje daje ljubičasti ton otkriva kako je boja ovih čaša bio namjeran čin. Nažalost za brojne ljubičaste čaše nema objavljenih nalaza koji bi nam pomogli u njihovu boljem određenju - kako datacije, tako i porijekla.

Bezbojne čaše valjkastog tijela, debljih stijenki s urezanim oblim udubljenjima vjerojatno potječu iz Češke (2, 228, 238). Tamo je tijekom 18. st. uvriježena moda graviranja stakla pomoću kotača koji su na stijeni stakla ostavljali upravo ovakve tragove (Barovier-Mentasti 2006; Horvat, Biondić 2007, sl.78). No također je moguće da su neke čaše u češkom stilu

using the mixture which gives the purple tone reveals that colour of these beakers was intentional. Unfortunately there are no published finds which would help us in determining dating and origin of purple beakers.

Colourless beakers with cylindrical body and thick walls with incised rounded cavities probably originate from Bohemia (2, 228, 238) where glass was engraved with a wheel in the 18th century leaving traces exactly as on our example (Barovier-Mentasti 2006; Horvat, Biondić 2007, fig.78). But it is also possible that some beakers in the Czech style were made on Murano as we know that the glassmaker Giuseppe Briati in 1737 got licence to produce such glass and brought masters from Bohemia to make glass in their specific way (Barovier-Mentasti 2006). Our engraved examples 2, 228, undecorated beakers 227, 238 and skittle-shaped



Slika 24. Ljubičaste čunjaste čaše (Foto: L. Bekić)
Figure 24. Purple skittle-shaped beakers (photo: L. Bekić)

izrađene na Muranu, jer je poznato kako je staklar Giuseppe Briati 1737. g. dobio licencu za proizvodnju takvog stakla te doveo majstore iz Češke kako bi ih na svoj način ovdje izrađivali (Barovier-Mentasti 2006). Naši gravirani primjerci 2, 228, neukrašene čaše 227, 238, pa i čunjaste čaše s okomitim utorima (5, 229) na osnovu bliskih analogija iz starog franjevačkog samostana u Osijeku vjerojatno se mogu datirati u 18. st. (Horvat, Biondić 2007, 144 - 161).

Tu je još nekoliko većih i manjih čaša, npr. bezbojne čunjaste s glatkim stijenkama (10, 237). Zatim male čunjaste čašice 239 i valjkaste 249 koje su zbog dimenzija vjerojatno služile za žestoka pića. Zanimljiv je i dio vrlo male čašice ljubičastog tona s ručicom 16.

beakers with vertical grooves (5, 229) on the basis of close analogies from the old Francisan monastery in Osijek probably can be dated to the 18th century (Horvat, Biondić 2007, 144 - 161).

There are several more larger and smaller beakers, e.g. colourless skittle-shaped ones with smooth walls (10, 237). Then there are small skittle-shaped beakers and cylindrical ones 249 which were probably used for drinking spirits due to dimensions. Fragment of a very small purple beaker with a handle number 16 is very interesting.

Slika 25. Bezbojne čaše debelih stijenki (Foto: L. Bekić)
Figure 25. Colourless beakers with thick walls (photo: L. Bekić)

Zdjelice i ostali oblici staklenog posuđa

Pronađene su i dvije vrlo zanimljive posude nalik na zdjele, s uvučenim dnom, ukrašene okomitim rebrima (1, 77). Slični predmeti pronađeni su i na Gnaliću, gdje su u objavi određeni kao zdjele (Lazar, Willmott 2006, S9, fig.44). Također sličan predmet pronađen je i u otpadnoj jami starog grada Tuscania u pokrajini Lazio (Luzi 1992, fig.1-48). Međutim, možda su ove rebraste posude zapravo gornji dijelovi jedne vrste pehara (*Tazza*) koji su stajali na nozi koje su izgubljene. U francuskom staklarstvu slični su pehari (*Verres a tige*) poznati iz više radionica i smatra se da su ušli

Small bowls and other forms of glassware

Two very interesting vessels resembling bowls were found, with concave base, decorated with vertical ribs (1, 77). Similar artifacts were found in Gnalić where they were published as bowls (Lazar, Willmott 2006, S9, fig.44). Similar object was found in a waste pit of the old town of Tuscania in the region of Lazio (Luzi 1992, fig.1-48). However perhaps these ribbed bowls were actually upper parts of a kind of goblets (*Tazza*) which stood on the foot, now lost. In the French glasswork similar goblets (*Verres a tige*) are known from several workshops and the beginning of

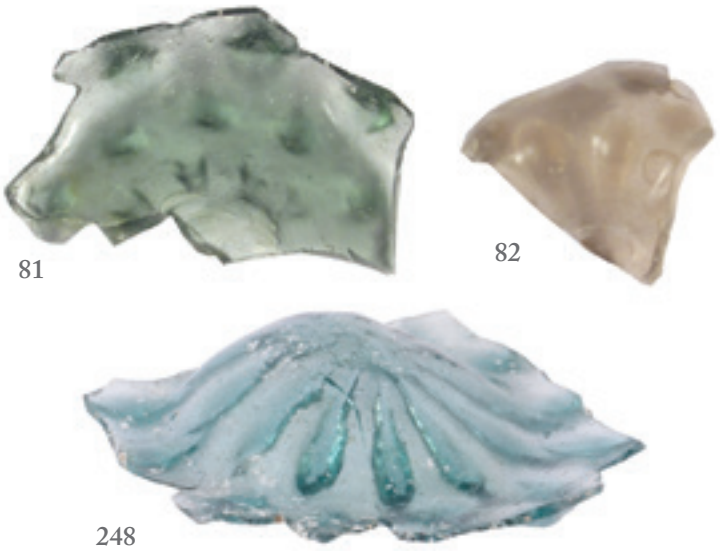
Slika 26. Rebraste zdjele ili pehari (Foto: L. Bekić)
Figure 26. Ribbed bowls or goblets (photo: L. Bekić)

u uporabu tijekom 14. st. (Vaudour 2009, 91). U svakom slučaju riječ je o vrlo luksuznim predmetima i prava je sreća da je ovaj jedan primjer tako dobro očuvan. Primjerak 1 bogato je ukrašen okomitim rebrima i naknadno apliciranim vodoravnim staklenim trakama zlatne boje. Ove zdjele ili pehare mogli bismo datirati u 16. st.

Uz ove rebraste posudice postoje još tri koje im donekle nalikuju. To su posudice 81 i 82 iz Veštra i 248 sa Selina, sve s kapljičastim reljefnim ukrasom. Možda su i one dijelovi pehara, mada je vjerojatnije riječ o zdjelicama. Valja upozoriti kako je ovakav ukras poznat i s drugih posuda poput čaše 9. Široka stopa 247, blago smeđeg tona, vjerojatno je nosila na sebi neku zdjelu. Slične stope postoje i na Gnaliću (Lazar, Willmott 2006, S10, fig.46-48), s kraja 16. st.

their use is dated to the 14th century. (Vaudour 2009, 91). In any case these are very luxurious objects and it is a fortunate circumstance that this example is so well preserved. Example 1 is richly decorated with vertical ribs and subsequently applied glass threads gold in colour. These bowls or goblets may be dated to the 16th century.

In addition to these small ribbed bowls there are three more which resemble them to a certain extent. These are small vessels 81 and 82 from Veštar and 248 from Seline all with drop-shaped relief decoration. Perhaps they also were parts of goblets though it is more likely that these were small bowls. Identical ornament is known from other vessels such as beaker 9. Wide ring base 247, in light brown tone, probably carried some kind of a bowl. Similar ring bases were found



Slika 27. Ulomci zdjela s kapljičastim reljefom (Foto: L. Bekić)
Figure 27. Fragments of bowls with drop-shaped relief (photo: L. Bekić)

Jedan jedini ulomak iz ove kolekcije (290) možda na sebi nosi ostatke ukrasa bojanjem (*decorazione a smalto*) i pozlaćivanja. Ulomak je izrađen od svjetloplavog stakla, po sredini ima jedno slabije izraženo rebro i ima tragove pozlate i bojanja crvenom bojom. Na žalost ulomak je premalen da bi mu se odredio oblik, a boje su uglavnom otpale, no takvo ukrašavanje najčešće je na peharima.

Sasvim je neobična i svjetloljubičasta zdjelica (302) s jako razvraćenim rubom, koji je uz to valovito formiran. Oblikovno, ovakvi valoviti rubovi mogu se usporediti s nekim nalazima mletačkih pehara koji se datiraju u 16. st. (Migliori 2001, 23), međutim, prema boji i debljini stijenke ova zdjelica više nalikuje kasnijoj produkciji, pa bi njezinu dataciju

in Gnalić (Lazar, Willmott 2006, S10, fig.46-48), from the end of the 16th century.

Only one fragment from this collection (290) may have had traces of decoration by painting (*decorazione a smalto*) and gilding. The fragment was made of light blue glass, it has a slightly pronounced rib in the middle and traces of gilding and painting in red. Unfortunately the fragment is too small to determine its form, and colours have mostly fallen off but such decoration is most frequent on goblets.

Another unusual vessel is small light purple bowl (302) with strongly everted wavy rim. Morphologically such wavy edges can be compared to some finds of the Venetian goblets dated to the 16th century (Migliori 2001, 23), however on the basis of

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Slika 28. Zdjelica za jako razvraćenim, valovito oblikovanim rubom (Foto: L.Bekić)
Figure 28. Small bowl with strongly everted, wavy rim (photo: L. Bekić)

možda bolje bilo smjestiti tek u 18. st. pa dalje. Jedinstvenost ovakvih proizvoda ne dopušta sigurnije zaključke, a treba imati na umu i mogućnost da je to jedan od unikatnih proizvoda nekih klasičnih venecijanskih radionica poput Cappellina koji je slične predmete u secesijskom stilu izrađivao oko 1900. g.

Ručka svjetloljubičastog stakla (84) vjerojatno potječe od nekog manjeg vrča. Takve ručke zabilježene su na više vrčića s Gnalića (Lazar, Willmott 2006, fig.65: S18a) pa ih možemo datirati u kasno 16. st.

Na ovim podvodnim nalazištima - sidrištima, vrlo rijetko pronađe se prozorsko staklo. Jedan komad okruglog prozorskog stakla sa zadebljanjem pronađen je na Selinama (240). Takvih pronalazimo i na Gnaliću (Lazar, Willmott 2006, S29a, fig.92) u kasnom 16. st., ali je tradicija uporabe takvog prozorskog stakla vrlo duga.

Izduženi komadi bezbojnog stakla s ravno odrezanim otvorom na

colour and thickness of walls this small bowl has more similarities with later production so that we could date it to the 18th century and later. Uniqueness of such products does not allow more certain conclusions and we need to have in mind possibility that this might be a unique product of some classical Venetian workshops such as Cappellini who made similar objects in the Art Nouveau style around 1900.

Handle made of light purple glass (84) was probably a part of some smaller jug. Such handles were recorded on several juglets from Gnalić (Lazar, Willmott 2006, fig.65: S18a) so we can date them to the late 16th century.

On these underwater sites – berths, window panes represent rare finds. One piece of a round window pane with a thickening was found in Seline (240). Similar artifacts are found at Gnalić (Lazar, Willmott 2006, S29a, fig.92) in the late 16th century but tradition of use of such window pane is very long.

Elongated pieces of colourless glass with straightly cut opening on the narrow side most probably belonged to glass parts of oil lamp (76, 243,

užoj strani najvjerojatnije su pripadali staklenim dijelovima petrolejke (76, 243, 244, 245). Njihovo je staklo mnogo čišće strukture i pravilnih oblika pa se može zaključiti kako je strojno izrađivano tijekom 20. st.

Svjetlozelenkasti dio staklene posude neobičnog oblika 189, iz uvale Kuje, nepoznate je namjene. Sličnog su oblika drške staklenih poklopaca koje poznajemo s brodoloma Drevine iz 17.st (Kisić 1982, Sl.23). Inače su takve male drške staklenih poklopaca izrađene od punog stakla, dok je naša posudica šuplja, pa tako donekle sliči ranosrednjovjekovnim i srednjovjekovnim visećim uljnim svjetiljkama.

Na kraju valja spomenuti staklene perle koje su zapravo čest nalaz, mada ih je ponekad teško datirati. Ipak, neki brodolomi daju nam jasnu sliku kakve su perle korištene u novovjekovnom razdoblju. Poznate su brojne perle s brodoloma Gnalić kod Pakoštana iz kasnog 16. st. (Lazar, Willmott 2006, 23) brodoloma ranog 17. st. Mijoka kod Murtera (Zmaić 2009, Sl.7), a postoje i brojni primjeri s brodoloma Drevine kod Dubrovnika s početka 18. st. (Kisić 1982, 160, Sl.25).

Nedavno, 2008. godine, Ministarstvo kulture RH financiralo je restauriranje jednog drvenog sanduka s Drevina, a na njemu su se s vanjske strane u konglomeratu željezne korozije i pijeska pronašle i sitne

244, 245). Their glass has much purer structure and regular forms so we can conclude that it was made during the 20th century.

Purpose of the light green fragment of a glass vessel of unusual form 189, from the bay of Kuje, is unknown. Handles of glass lids known from the Drevine shipwreck from the 17th centry (Kisić, 1982, fig. 23) have similar form. Such small handles of glass lids were usually made of full glass while our small vessel is hollow, resembling to a certain degree early medieval and medieval hanging oil lamps.

Finally we need to mention glass beads which are actually quite frequent finds though sometimes very difficult to date. However some shipwrecks give us a very clear image of what beads were used in the Post-Medieval Era. Many beads were found on the Gnalić shipwreck near Pakoštane from the late 16th century (Lazar, Willmott 2006, 23), shipwreck from the early 17th century Mijoka near Murter (Zmaić 2009, fig.7), and there are many examples from the Drevine shipwreck near Dubrovnik from the beginning of the 18th century (Kisić 1982, 160, fig. 25).

Recently in 2008 Ministry of Culture of the Republic of Croatia financed restoration of a wooden chest from Drevine on which tiny glass beads were found on its outer side

staklene perlice. Više njih izvađeno je iz tog grumena kako bi se dobio uvid u njihovu raznolikost (Slika 29). Mada naizgled slične, na svakom od ovih brodoloma pronađu se i perle koje drugdje nisu zastupljene, što nam najzornije pokazuje kako je bogata bila produkcija ovog nakita u novovjekovno doba.

in a conglomerate of iron corrosion and sand. Several beads were taken out of that lump to get insight into their diversity (figure 29). Although seemingly similar, on each of these shipwrecks beads were found which are not represented elsewhere which illustrates rich production of this jewelry in the Post-Medieval Era.

Slika 29. Razne perle s brodoloma Drevine (Foto: L. Bekić)
Figure 29: Various beads from the Drevine shipwreck (photo: L. Bekić)

Zaključak

Najveći misterij predstavljaju boce skupine 1 što je neobično, jer su ovakve boce očito najčešći novovjekovni podmorski stakleni nalaz na istočnoj Jadranskoj obali. Ronioci MCPA Zadar pronalazili su ih od zapadne istarske obale do zadarskog arhipelaga. U Hrvatskoj gotovo da niti jedan primjerak nije bio objavljen, osim triju ulomaka s brodoloma na Drevinama (Kisić 1982, Sl.15) pa tako znamo da ih se može pronaći i na jugu zemlje. Što se tiče drugih zemalja, postoji samo potvrda kako su ove boce pronađene u Crnoj Gori, točnije sidrištu uvale Valdanos kod Ulcinja. Tamo su među ostalim novovjekovnim nalazima objavljene i dvije zelenkaste boce skupine 1B s bijelim rubom oboda (Karović 2008, sl.22). Ipak, najjužniji nalaz jedne boce srodne skupinama 1 i 2, dio je maslinastozelene boce čunjastog vrha s bijelim obrubom pronađene prilikom arheoloških iskopavanja u Butrintu u Albaniji.[5]

Dakle, sudeći prema rasporedu nalaza, koji su rastegnuti duž čitave istočnojadranske obale, možemo zaključiti kako su boce 1. skupine

5 Osobno priopćenje Samanthe Garwood, poslijediplomske studentice Sveučilišta u Sheffieldu, a istraživanja je vodio Ilir Parangoni sa Sveučilišta u Tirani.

Conclusion

Bottles of group 1 represent the greatest mystery which is surprising as such bottles were evidently the most frequent Post-Medieval Era underwater glass find on the eastern Adriatic coast. Divers of the ICUA Zadar found them from the western coast of Istria to the Zadar archipelago. In Croatia almost none of the finds were published except for three fragments from the shipwreck in Drevine (Kisić 1982, fig.15) so we are sure that they can be found in the south of our country. As for other countries, there is only confirmation that such bottles were found in Montenegro, i.e. berth of the bay of Valdanos near Ulcinj. Two greenish bottles of group 1B with white edge of the rim were published there alongside other Post-Medieval finds (Karović 2008, fig. 22). However southernmost find of a bottle similar to groups 1 and 2 is a part of olive-green bottle with skittle-shaped top with white lining which was found during the archaeological excavations in Butrint in Albania.[5]

Judging from the distribution of finds which spread along the eastern Adriatic coast we can conclude that the

5 Personal communication with Samantha Garwood, postgraduate student of the University of Sheffield, research was led by Ilir Parangoni from the University of Tirana.

lokalni proizvod nekih za sada nepoznatih staklarskih radionica na Jadranu i da su izrađivane uglavnom tijekom 17. st. Zastupljenost na sidrištima ne ukazuje samo na odbačeni teret, nego i na predmete koje masovno rabe mornari koji plove Jadranom. Boce 1. skupine tijekom vremena pomalo zamjenjuju i nasljeđuju boce 2 skupine, a porijeklo im je vjerojatno isto. Potvrdu nalazimo i u jednom primjerku nađenom u sjevernoj Italiji.[6]

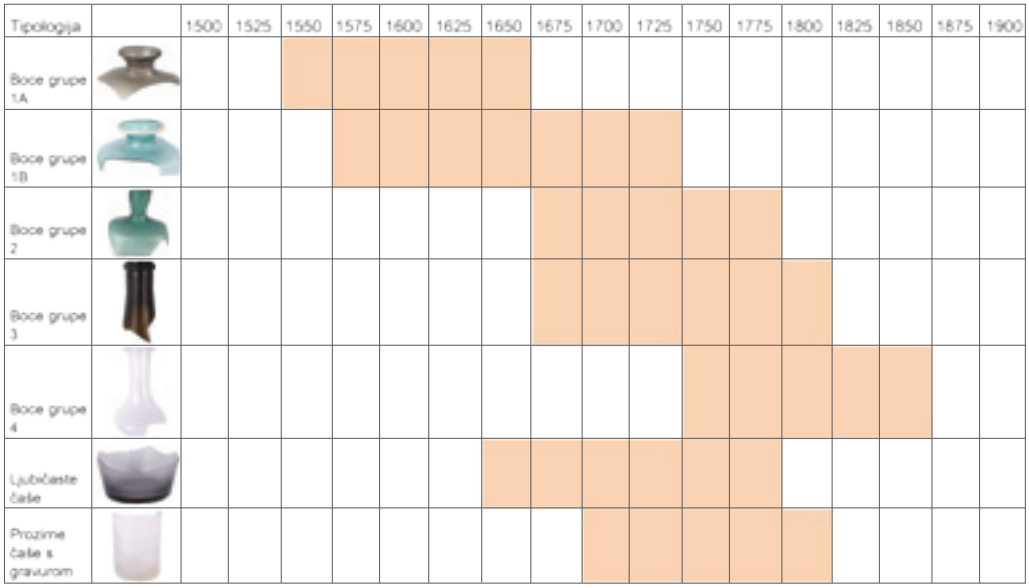
Boce skupine 3 očito pripadaju dobro poznatim tamnim vinskim bocama trbušastog oblika kakve su vrlo česte u drugoj polovici 17., a posebice u 18. st. Njihova zastupljenost na brodovima zemalja zapadne i sjeverne Europe velika je te je neobično da ih se u na Jadranu nije pronašlo, u statističkom omjeru, i mnogo više. Boce skupine 3 nisu nestale, već su doživjele mnoge važne promjene u tehnici izrade, a time i izgledu tijekom 19. st. Nastavile su se razvijati i do danas, kada ih poznajemo kao tamne vinske butelje. Promjene u staklarskoj tehnici 19. st. otvaraju prostor za dolazak masovnog korištenja bezbojnih boca sa zaobljenim Γ profilom oboda,

bottles of group 1 were local products of some unknown glassmaking workshops on the Adriatic and that they were made mostly during the 17th century. Their presence on berths does not indicate only discarded cargo but also that they were objects used massively by the sailors sailing on the Adriatic. Bottles of group 1 gradually replaced and inherited bottles of group 2, and their origin is probably identical. Confirmation can be found in one example found in northern Italy.[6]

Bottles of group 3 evidently belong to well-known dark squat wine bottles which are very common in the second half of the 17th century, and particularly in the 18th century. They appear frequently on the ships of the countries of western and northern Europe and it is unusual that more of them were not found on the Adriatic, in statistical terms. Bottles of group 3 did not disappear but they underwent many important changes in the production technique, and therefore in appearance during the 19th century. They continued to develop to the present day when we know them as dark wine bottles. Changes in glassmaking technique in the 19th century enabled introduction of massive use of colourless bottles with

6 Slika boce skupine 2 s nalazišta u okolici Venecije nalazi se prikazana na stranici: www.archeove.com/pubblic/vetro/vetro.htm

6 Photograph of a bottle of group 2 from the site in vicinity of Venice is presented on the web page www.archeove.com/pubblic/vetro/vetro.htm.



Slika 30. Tipološko-datacijska tablica najčešćih skupina nalaza
Figure 30. Table representing typology and dating of the most frequent groups of finds

naše skupine 4. Mada izrađivane puhanjem, ovakve boce proizvodile su se do 20. st. u manjim radionicama u raznim oblicima. Za razliku od boca skupine 3 u kojima se vino moglo skladištiti, boce 4 skupine korištene su uglavnom za posluživanje vina iz bačava na stolove.

Ostale boce u našoj zbirci uglavnom su pojedinačni primjerci. Poneke se, posebice starije, mogu tipološki odrediti, a mnoge su za sada neistražene i nedovoljno dokumentirane u arheološkoj literaturi.

Što se tiče čaša i pehara, moguće je odrediti mnoge oblike čaša na nozi,

rounded Γ profile of the rim, our group 4. Although they were made by blowing such bottles were produced until the 20th century in smaller workshops in various forms. As opposed to the bottles of group 3 in which wine could have been stored, bottles of group 4 were used mainly for serving wine from barrels to tables.

Remaining bottles in our collection are mostly individual examples. Some of them can be defined typologically particularly the older ones. Many of these vessels are not explored or documented sufficiently in the archaeological works.

jer se njihova izrada može povezati s muranskim centrom. Za ostale pojedinačne manje ulomke to nije moguće pa im je oblik i porijeklo još nejasno. Velik broj čunjastih čaša ljubičastih tonova pronađen je zajedno s bocama grupe 1 i 2. Na žalost nije moguće odrediti ni točno porijeklo ni dataciju tim čašama zbog apsolutnog nedostatka usporednih nalaza. Na osnovi generalnih kretanja u oblikovanju čaša, popratnih nalaza i tehničkih karakteristika, za sada ih se može smjestiti u 18. st. Valjkaste bezbojne čaše od kojih mnoge imaju ukrase graviranjem, bez sumnje se mogu smjestiti u 18. st. i vjerojatno pripisati češkim radionicama. Ostale pojedinačne i fragmentarne čaše teško je odrediti prema bilo kojem tipu s većom sigurnošću.

U ovoj zbirci nalazi se nekoliko stotina staklenih predmeta koji nam svjedoče o svakodnevnom korištenju stakla na brodovima od 16. do 19. st. Tek manji dio ovih predmeta može se pripisati trgovačkoj robi, koja je iz nekog razloga bila izbačena iz tereta na usidrenim brodovima. Buduća istraživanja ne samo podvodnih nalazišta poput sidrišta i brodoloma nego i priobalnih naselja, pomoći će nam u rasvjetljavanju ove zanimljive i nedovoljno poznate staklarske proizvodnje.

As for beakers and goblets, it is possible to define many forms of beakers on foot as their production can be related to the center in Murano. For the remaning individual smaller fragments it is not possible, so that their form and origin remain unclear. Great number of skittle-shaped beakers in purple tones were found together with beakers from groups 1 and 2. Unfortunately it is impossible to determine exact origin or dating of these beakers due to lack of analogies. On the basis of general trends in shaping of beakers, accompanying finds and technical characteristics, for now we can date them to the 18th century. Cylindrical colourless beakers many of which were decorated with engraving can doubtlessly be dated to the 18th century and probably ascribed to the Czech workshops. Other individual and fragmentary beakers can hardly be classified into types with certainty.

In this collection there are several hundreds glass objects which testify to everyday use of glass on ships from the 16th to 19th centuries. Only a smaller part of these objects can be ascribed to merchandise which was for some reason discarded from cargo on anchored ships. Future research of not only underwater sites such as berths, shipwrecks but also coastal settlements will help us in sheding more light on this interesting and poorly known glass production

Proizvodnja stakla u Veštru kod Rovinja

Tijekom podvodnih arheoloških istraživanja u Veštru pronađen je veći broj različitih staklenih perli, dijelova boca, zdjela i drugih posuda, koje se mogu datirati od 16. do 18. st (Bekić, Višnjić, Pešić, Bloier 2011, 30, 31, 66). Ovakvi nalazi nisu neobični u lukama koje se koriste tijekom tog razdoblja.

Međutim, uz njih je pronađen i velik broj sitnijih ulomaka rastaljenog stakla raznih boja, nekoliko komada rastaljene sirovine kao i dva grumena crne staklene sirovine. Posebice je zanimljivo to što je do sada u uvali prikupljeno preko 20 staklenih štapića i cjevčica raznih boja i dimenzija. Stratigrafski, osim primjeraka pronađenih na morskom dnu kao slučajni nalaz, pojedini su štapići i cjevčice pronađeni u isključivo novovjekovnom sloju.[7] Ovakvi štapići nisu gotov proizvod, već su poluproizvodi koji se koriste u izradi staklenih posuda u muranskom stilu. Topljenjem ovih štapića mogu se na već izrađene posude dodatno

7 Valja napomenuti kako su stakleni štapići i cjevčice poznati i u antičkom staklarstvu Bliskog istoka i Indije, ali su redovno neurednije formirani (Israel 1991, Pl.XII, Pl.XIVa; Stern 1991, Pl.XXXVIIIa). Smatra se kako su uglavnom korišteni za izradu perli.

Production of glass in Veštar near Rovinj

Many various glass beads, bottle fragments, bowls and other vessels were found during underwater archaeological research in Veštar which can be dated from the 16th to 18th centuries (Bekić, Višnjić, Pešić, Bloier 2011, 30, 31, 66). Such finds are not unusual in ports which are used during that period.

However there were also many small fragments of molten glass in various colours, several pieces of molten raw material as well as two lumps of black glass raw material. It is particularly interesting that over 20 glass sticks and tubes in various colours and sizes were collected in this bay. In terms of stratigraphy, certain sticks and tubes were found only in the Post-Medieval layer in addition to examples found on the seabed as chance finds.[7] Such sticks are not finished products but half-products used in the production of glass vessels in the „Murano style". If these sticks were melted, handles or ornaments in different colours could have been added

7 Glass sticks and tubes were known in ancient glass production of the Near East and India, but they were not made so neatly (Israel 1991, Pl.XII, Pl.XIVa; Stern 1991, Pl.XXXVIIIa). Probably they were used for making beads.

Slika 31. Rastaljena opeka s tragovima ocakljivanja (Foto: L. Bekić)
Figure 31. Molten brick with traces of glazing (photo: L. Bekić)

aplicirati ručice ili ukrasi u drugoj boji, a ispreplitanjem više raznobojnih štapića i posebice atraktivne ukrase. Mogu se i rastaliti te ugraditi u stijenke posuda. Štapići se također mogu koristiti u izradi različitih perli za ogrlice. Činjenica da se pronašlo više rastaljenih štapića kao i grumena sirovine za izradu stakla dokazuju kako je riječ o sirovinama koje su bile korištene u nekoj staklarskoj radionici. Daljnjim je istraživanjem na obali mora u blizini mola 3 pronađen velik broj opeka koje na sebi imaju tragove ostakljivanja uslijed visoke temperature, ali i rastopljene staklaste materije. To bi mogli biti ostatci peći za staklo, ali isto tako i ostatci peći u kojima se pekla cakljena keramika, za proizvodnju koje u Veštru također imamo potvrde.

Nalazi koji se mogu čvrsto povezati s izradom stakla u novovjekovnom razdoblju nisu pronađeni nigdje

on vessels. Very attractive ornaments could be obtained by intertwining several polychrome sticks. They could also be melted and incorporated into the vessel walls. Sticks could also be used in production of various beads for necklaces. As several molten sticks were found as well as lumps of raw material for making glass it is evident this was raw material used in some glass workshop. Further research on the coast in the vicinity of quay 3 unearthed great number of bricks with traces of glazing due to high temperatures and molten glassy material. These may be remains of a glass kiln or remains of a kiln for firing glazed pottery whose production in Veštar has been attested.

Finds which can be firmly related to glass production in the Post-Medieval Era have not been found elsewhere in Croatia which is why they are very important in our archaeology. Unfortunately question of workshop

drugdje u Hrvatskoj, stoga imaju za našu arheologiju velik značaj. Na žalost, razrješavanje pitanja zgrade radionica i arhitektonski ostatci peći za sada će ostati prikriveni makijom na obali Veštra. Naša saznanja o toj potencijalnoj radionici stakla moramo, dakle, crpiti samo iz nalaza koje smo prikupili tijekom podvodnih arheoloških istraživanja te ponekih nalaza na obali mora.

Glavni su svjedoci stakleni štapići (110, 113, 114, 115, 116, 117, 1355, 1364, 1365) i cjevčice (111, 112, 124, 1353, 1354, 1355) od kojih su neki pronađeni i u novovjekovnim

objects and architectural remains of kilns will remain covered with bush on the coast of Veštar. Our insights about this potential glass workshop must rely only on finds collected during underwater archaeological excavations and certain finds on the sea coast.

The main „witness" are glass sticks (110,113,114,115,116,117,1355,1364, 1365) and tubes (111, 112, 124, 1353, 1354, 1355) some of which were found in the Post-Medieval layers. Sticks vary in dimensions but sometimes they are very small (127, 128) and they were also found in the Post-Medieval layer. They are all in different colours, more

Slika 32. Štapići i cjevčice iz Veštra (Foto: L. Bekić)
Figure 32. Sticks and tubes from Veštar (photo: L. Bekić)

Slika 33. Savinuti štapići i cjevčice iz Veštra (Foto: L. Bekić)
Figure 33. Bent sticks and tubes from Veštar (photo: L. Bekić)

slojevima. Štapići su različitih dimenzija, poneki su izvanredno mali (127, 128), a također su pronađeni u novovjekovnom sloju. Svi su različitih boja, više ili manje transparentni, a prevladavaju zelenkasti i plavkasti tonovi. Također su zastupljeni i smećkasti kao i žućkasti tonovi.

Drugi štapići već su djelomično savinuti, vjerojatno tijekom početka obrade (118, 119, 120, 1365, 287). Boje ovih štapića pronalaze se na raznim posudama stakla muranske škole pa tako možemo predmnijevati kako je njihov vlasnik otamo potjecao ili se barem trudio imitirati tu produkciju. Svinuti štapić 119 zapravo je žućkaste prozirne boje, ali naknadno je presvučen neprozirnim zelenim staklom. Izdvaja se jedan već svinuti štapić (120) neprozirne bijele boje (mliječne) koji se može povezati s izradom boca prve skupine, koje imaju na otvoru aplicirane upravo ovakve bijele trake.

Sve u svemu, dosada smo u Veštru pronašli preko dvadeset štapića ili

or less transparent, with dominant greenish and bluish tones. There are also brownish and yellowish tones.

Long sticks were partially bent, probably during the beginning of the treatment (118, 119, 120, 1365, 287). Colours of these sticks can be found on various vessels of the Murano school so we can assume their owner's origin or he at least tried to imitate that production. Bent stick 119 is actually transparent yellowish in colour, but it was subsequently coated with opaque green glass. A bent stick (120) in opaque white (milky) is particularly interesting as it can be connected with production of the bottles of the first group which have such white bands applied on their opening.

So far we have found over twenty sticks or tubes in Veštar in various colours and stages of usage which is quite a big number. On the position of an important glassworks from the 17th century in Broumy in the Czech Republic only nine sticks were found (Žeklic 2007, Fig.42).

292

100

Figure 34. Lumps of black glass raw material (photo: L. Bekić)
Slika 34. Grumeni crne staklene sirovine (Foto: L. Bekić)

cjevčica raznih boja i stupnja korištenja, što je zapravo velik broj. Za usporedbu, na položaju značajne staklane 17. st. u Broumyu u Češkoj pronađeno je tek devet štapića (Žeklic 2007, Fig.42).

Dva komada amorfne staklene sirovine crne su neprozirne boje (100, 292). Valja upozoriti kako je još prije stotinu godina zapaženo postojanje crnih grumena stakla u Veštru, ali to se tada povezivalo s rimskom proizvodnjom stakla (Benussi 1977, 30,31)[8]. Moguće je da su ti grumeni zapravo povezani s proizvodnjom u 17./18. st., posebice zato što je ovaj drugi primjerak pronađen u stratigrafski novovjekovnom sloju mola 3.

Two pieces of amorphous glass raw material are opaque black in colour (100, 292). We need to emphasize that a hundred years ago black lumps of glass were noticed in Veštar but it was connected with the Roman glass production at the time (Benussi 1977, 30,31)[8]. It is possible that these lumps were related to the production in the 17th/18th centuries particularly as this second example was found in stratigraphically Post-Medieval layer of the quay 3.

There are several pieces of molten glass (101, 102, 103, 104, 105, 123) but we cannot state with certainty if they are dated to the Post-Medieval Era or antiquity. Piece of molten blue glass 123 which was found in the

8 Sirovinu bi naravno trebalo kemijski analizirati kako bi se došlo do konkretnijeg zaključka. Crne neprozirne sirovine stakla nisu nepoznate u rimsko doba (Paynter, Dungworth 2011, Fig.31).

8 Raw material should be analyzed chemically to reach sound conclusion. Black opaque raw materials of glass were known in the Roman period (Paynter, Dungworth 2011, Fig.31).

Rastaljenih komada stakla ima više (101, 102, 103, 104, 105, 123), ali za njih uglavnom ne možemo sa sigurnošću reći datiraju li se u novovjekovno ili antičko razdoblje. Tu valja izdvojiti komad rastaljenog plavog stakla 123, koji je pronađen u stratigrafski novovjekovnom sloju SJ 3 u sondi 3. Iste konzistencije i boje radionički je otpad 17. st. iz Silkstona u južnom Yorkshireu (Paynter, Dungworth 2011, Fig.35).

Staklene posude pronađene u uvali Veštar (64-88 itd.) ne mogu se izravno povezati s radionicom jer ne predstavljaju radionički otpad. Ipak ne možemo isključiti i da su neki od ovih predmeta povezani s tragovima ove radionice. Isto vrijedi i za neke perle, za koje možemo reći da nisu antičkog postanja, a pronađene su u blizini ovih predmeta. To su mala plava narebrena perla 90, sitna plava plosnata perla 301, zelena neprozirna perla 300 te zaglađena prozirna zelena perla 89. Narebrene plave perle poput primjerka 90 mogu se pronaći na brodolomu Gnalić (Lazar, Willmott 2006, 23), a malo veće tamnozelene poput one 89, na brodolomu Mijoka kod Murtera (Zmaić 2009, Sl.7). Na istom brodolomu postoje i sasvim malene plave perle, kao ova 301, a takve su nađene i na brodolomu Drevine (Slika 29).

Osim pitanja je li u Veštru bila radionica stakla, na koje bi na osnovi izloženog mogli odgovoriti da vrlo

Post-Medieval layer SJ 3 in probe 3 is particularly interesting. Workshop refuse from the 17th century from Silkstone in southern Yorkshire (Paynter, Dungworth 2011, Fig.35) has identical consistency.

Glass vessels from the bay of Veštar (64-88 etc.) cannot be directly linked with the workshop as they are not workshop refuse. However it is possible that some of these objects are related with traces of this workshop. The same goes for the beads which cannot be dated to antiquity and they were found close to these objects. These are small ribbed bead 90, small flat bead 301, green opaque bead 300 and smooth transparent green bead 89. Ribbed blue beads such as the example 90 can be found on the Gnalić shipwreck (Lazar, Willmott 2006, 23) and somewhat bigger such as 89, on the Mijoka shipwreck near Murter (Zmaić 2009, Sl.7). There are quite small blue beads as 301 on the same shipwreck, and identical items were found on the Drevine shipwreck (figure 29).

Except for the question if there was a glass workshop in Veštar, to which possible answer would be more than likely, there is also the question of why it was located there.

It is a known fact that glassmakers from Murano emigrated to other cities out of the scope of the Republic to found their workshops there despite

Slika 35. Razne staklene perle iz Veštra (Foto: L. Bekić)
Figure 35. Various glass beads from Veštar (photo: L. Bekić)

vjerojatno jest, postavlja se i pitanje zbog čega se tu nalazila.

Poznato je kako su suprotno zakonima Mletaka muranski staklari emigrirali u druge gradove izvan domašaja Republike kako bi tamo osnivali svoje radionice (Barovier-Mentasti 2006). Ovaj proces posebice je bio izražen od 16. st., a ti su lutajući staklari izradom stakla na muranski način u novim okruženjima stvorili novi sveuropski fenomen *façon de venise*, odnosno izradu stakla temeljeni na mletačkoj modi. Mletačka je Republika taj trend zabranjivala, pozivajući ih da se vrate pod prijetnjom raznih kazni (Moretti, Salerno, Ferroni 2003, 241). Sve je to bilo u cilju zadržavanja monopola na muransku tehniku izrade stakla, ali je isto tako očito bilo neuspješno. Je li tko od muranskih staklara započeo svojom proizvodnjom u Veštru, donijevši sobom opremu i sirovine? Ova je opcija manje vjerojatna jer je u to doba Rovinj i okolica čvrsto u rukama Mlečana, koji bi staklaru s Murana svakako zabranili rad

Venetian regulations (Barovier-Mentasti 2006). This process was particularly pronounced in the 16th century and these „wandering" glassmakers made glass in the Murano way in their new communities creating in that way a new all-European phenomenon called *façon de venise*, i.e. glass production based on the Venetian fashion. The Venetian Republic prohibited that trend calling them to come back and threatening them with different punishments (Moretti, Salerno, Ferroni 2003, 241). Everything was done to retain monopoly in the Murano technique of glass production but it was evidently unsuccessful. Is it possible that some of Murano glassmakers started his production in Veštar, bringing along his equipment and raw material? This option is less likely as Rovinj and its surroundings were under Venetian rule which would definitely prevent a glassmaker from Murano to work in Veštar or he would have to work illegally which is impossible in this case for technical reasons.

u Veštru ili bi on morao raditi ilegalno što je iz tehničkih razloga u ovom slučaju nemoguće.

Druga mogućnost je da je luka Veštar služila kao krijumčarska točka. Naime, poznato je da je izvoz opreme za izradu stakla, ali i poluproizvoda i same sirovine izvan granica Mletačke Republike, bio strogo zabranjen (Moretti, Salerno, Ferroni 2003, 241). Postojanje ovakvih zabrana logična je posljedica takve djelatnosti pa se može nagađati kako je i luka Veštar, podalje od rovinjskih gradskih straža, mogla služiti krijumčarima za iskrcavanje robe koja je potom putovala prema unutrašnjosti Istre i granici. A granica nije bila daleko jer je od Žminja počinjao teritorij vojvodine Kranjske odakle je roba mogla slobodno biti transportirana prema staklarskim radionicama srednje Europe. Ipak ova je opcija upitna jer osim prisutnosti sirovina i poluproizvoda, u Veštru nalazimo i pojedine tragove već započete obrade poluproizvoda što ipak ukazuje na pravu proizvodnju.

Tijekom srednjeg vijeka u srednjoj Europi postojale su i brojne "šumske staklane" (*Waldglas-Hütten*) koje su u manjem opsegu proizvodile uglavnom svakodnevno stakleno posuđe (Barovier-Mentasti 2006). Njihov smještaj u šumama opravdan je zbog neograničene količine gorivog materijala koji je bio potreban za pepeljiku (potašu) i loženje peći. A

The second possibility is that the port of Veštar was used as a smugglers' point. Export of glass producing equipment, half-products and raw-material outside the borders of the Venetian Republic was strictly forbidden (Moretti, Salerno, Ferroni 2003, 241). Existence of such prohibitions is a logical consequence of such activities so we might guess that the port of Veštar, away from the Rovinj city guards may have served to the smugglers for unloading goods which were further directed toward the interior of Istria and the border which was near since the territory of the Duchy of Carniola started from Žminj wherefrom commodities may have freely been transported towards glassmaking workshops of central Europe. However this option is questionable as in Veštar we have traces of working of half-products which indicates actual production.

Many „wood glassworks" (*Waldglas-Hütten*) worked in central Europe during the Middle Ages which produced mostly everyday glass ware in a limited amount (Barovier-Mentasti 2006). Their location in the woods was justified due to unlimited source of wood necessary for potash and for stoking kilns. According to present-day knowledge Veštar was uninhabited for the most part in that period and distant from the first cities – Rovinj and Bale. We have a testimony from

Slika 36. Luka Veštar i danas se koristi kao sidrište. U prvom planu današnji mol u drugom planu ostaci mola iz 17. st. (Foto: L. Bekić)
Figure 36. The port of Veštar is still used as a berth. In foreground present-day quay, in background remains of a quay from the 17th century (photo: L. Bekić)

prema sadašnjim saznanjima Veštar je u to doba bio uglavnom nenaseljen i udaljen od prvih gradova - Rovinja i Bala. O tome da su tu bile šume imamo svjedočanstvo još iz 9. st. kada biskup Maksimilijan dobiva Veštarsku šumu za svoje zasluge. I prilikom podvodnog arheološkog istraživanja mola broj 3 u Veštru, u sondi D pronađen je debeo sloj drvenih grana namjerno posječenog drveća i makije (SJ 2). Kako se ovaj sloj datira u početak 17. st., očito je okoliš

the 9th century that woods covered this area when bishop Maximilian got the wood of Veštar for his merits. During underwater archaeological excavations of the quay number 3 in Veštar, thick layer of wooden branches of intentionally cut trees and bushes was found in probe D (SJ 2). As this layer is dated to the beginning of the 17th century it is evident that the surrounding of the bay was overgrown with wood and bushes. We also know that at that time Veštar

uvale i tada bio bogato zarašten šumom i makijom. Također nam je poznata činjenica kako je Veštar u to doba bio korišten kao luka za utovar drvne građe za potrebe mletačkog arsenala. I ovo govori u prilog tome da je u okolici bilo dovoljno drva za proizvodnju stakla. Ovakva manja radionica vjerojatno je mogla proizvoditi jednostavnije staklene posude i perle za potrebe šireg području, ali i za trgovinu koja se odvijala kroz ovu luku. No izrada stakla u "šumskim staklanama" karakteristična je prije svega za područje srednje Europe, Češku, Njemačku i druge, a prva takva staklana u nas započela je radom tek u 18. st. u Crnom Lugu u Gorskom kotaru.

Zadnja mogućnost je kako je sva ova staklarska građa u neko doba nasumce izbačena u uvali. No s obzirom da je dosad pronađeno stotinjak ulomaka staklenih posuda, cjevčica i štapića te sirovine na širokom prostoru uvale, tih nalaza očito možemo očekivati u mnogo većim količinama. Stoga neko slučajno iskrcavanje jednog tovara stakla i radioničkog otpada ne bi ostavilo toliko traga, i na tolikom prostoru.

Očito je da konačnog rješenja za tumačenje ovih nalaza još nema. Prava potvrda postojanja staklane mogli bi biti samo građevinski ostatci radionice s pećima. Buduća će istraživanja nadamo se otkriti više o toj tajanstvenoj staklarskoj radionici čiju građu pronalazimo u luci Veštar kod Rovinja.

was used as a port for loading wood material for the needs of the Venetian arsenal. This supports the fact that there was enough wood for glass production in the surrounding of Veštar. Such smaller workshop probably could have produced simpler glass vessels and beads for the needs of wider area and for trade going through this port. However making of glass in „wood glasshouses" is characteristic primarily for the region of central Europe, Bohemia, Germany and others, and first such glasshouse in Croatia started working only in the 18th century in Crni lug in Gorski Kotar.

The last possibility is that all these glass finds were randomly discarded in the bay at some point. But if we have in mind that arovnd hundred of glass vessels, tubes, sticks and raw material were found in the wide area of the bay, we can expect even more finds of the kind. Some accidental unloading of a cargo of glass and workshop refuse would not leave so much traces and in such large area.

Evidently there is no final solution in interpretation of these finds. True confirmation of existence of glass workshop may be found only in architectural remains of a workshop with kilns. Future research will hopefully reveal more about that mysterious glass workshop whose products we find in the port of Veštar near Rovinj.

Proizvodnja stakla u novom vijeku

Za razumijevanje ovog staklarskog opusa prezentiranog u prvim poglavljima ovog kataloga, kao i same potencijalne radionice u Veštru, valja ukratko objasniti postupke izrade stakla u razdoblju od 16. do 19. st.

Vrlo je zanimljivo istraživanje obavljeno u Broumy u Češkoj, gdje je arheološki i povijesno razotkrivena renesansna radionica stakla, koja je pod raznim majstorima djelovala od oko 1596. do oko 1743. g. (Žeklic 2007). Tu se potanko opisuju osnovne pretpostavke za smještanje radionice u prostoru. Blizina šume za drva koja su korištena u pećima, ali i za proizvodnju pepela - pepeljike, ležište finog kvarcnog pijeska za sirovinu, vode itd. Opisuje se i organizacija prostora ovog pogona sa svim potrebnim majstorima i njihovim pomoćnicima, kao i potreba za pisanim ugovorom između vlastelina i majstora koji određuje obveze obiju strana. Također su istražene i neke radionice u južno-francuskoj pokrajini Bas Languedoc koje nam daju mnoštvo podataka o proizvodnji srednjovjekovnog i ranonovovjekovnog stakla (Commandre 2011). Na Jadranu nije bilo takvih istraživanja, ali staklo se i ovdje proizvodilo na sličan način.

Sredinom 18. st. u Francuskoj je objavljivana enciklopedija Diderot, koja u sebi donosi brojne ilustracije iz svijeta staklarstva. Nekoliko njih

Glass production in the Post-Medieval Era

In order to understand properly glass finds presented in the first chapters of this catalogue, as well as the possible glass workshop in Veštar we need to explain shortly procedures of glass production from the 16th to 19th centuries.

A very interesting research was published in Broumy in the Czech Republic where a Renaissance glassworks was explored from archaeological and historical standpoint which functioned under various masters from 1596 to 1743 (Žeklic 2007). Here we have detailed description of all basic prerequisites necessary for chosing adequate environment for glassworks such as nearness of a wood for firewood used in kilns and for production of ashes – potash, deposit of quartz sand for raw material, water etc. There is also a description of organization of space of this facility with all necessary masters and their assistants as well as the need for a written contract between the landlord and master which determines obligations of both sides. Some workshops in the French region of Bas Languedoc were also explored offering us a multitude of information about the production of medieval and early medieval glass (Commandre 2011). There were no such research on the

vrlo je zanimljivo jer govore upravo o razdoblju kada je najveći broj naših predmeta izrađen. Ilustrirane tehnike možemo prepoznati u brojnim predmetima ove zbirke.

Za razliku od rimskog razdoblja, u novovjekovnim radionicama obavljale su se obje ključne faze izrade stakla. Izrada staklene mase iz osnovnih sirovina i druga faza, izrada staklenih posuda iz poluproizvoda i staklene mase (Paynter, Dungworth 2011, 4). Ovisno o osnovnim sirovinskim materijalima te njihovim omjerima postoji nekoliko osnovnih recepata za izradu stakla, no ti recepti nisu tema ovog kataloga. Recimo samo to kako se u mletačkim radionicama također koristio kvarcni pijesak (sa Sicilije, Migliori 2001, 11), a od sredine 14. st. i kvarcni kamen iz rijeke Ticino, koji je sadržavao manje nečistoća. On se, naravno, prije uporabe drobio i usitnjavao prah. Za razliku od "šumskih radionica" srednje Europe koje su se koristile pepeljikom (potašom) kao primjesom, mletačke su radionice za to koristile sodu. Kasnije su i radionice na Muranu započele i s izradom tzv. olovnog stakla, koje je davalo više kristalnog bezbojnog sjaja proizvodima. Boja stakla ovisi o metalnim oksidima koji se nalaze u prikupljenoj sirovini, ali staklari su vremenom počeli i umjetno dodavati okside kako bi kontrolirali boje i tonove stakla (Paynter, Dungworth 2011, 6).

Adriatic but glass was produced here in a similar way.

In the mid-18th century encyclopaedia Diderot was published in France bringing many illustrations from the glassmaking world. Some of them are very interesting as they illustrate the period in which the greatest number of our finds was made. Illustrated techniques can be recognized in numerous objects from this collection.

As opposed to the Roman period both crucial phases of the glass production were performed in the Post-Medieval glass workshops – making of molten glass from basic ingredients and the second phase, making glass vessels from half-products and molten glass (Paynter, Dungworth 2011, 4). Depending on basic raw material and their proportions there are several basic recipes for glass production but they are not the theme of this catalogue. Let us only say that quartz sand was also used in the Venetian workshops (from Sicily, Migliori 2001, 11), and from the mid-14th century quartz sand from the river of Ticino which had less impurities. It was crushed and made into powder before use. As opposed to „wood glassworks" from central Europe which used potash as admixture, Venetian workshops used soda. Later on the workshops on Murano started making so-called „lead glass" which gave more crystal

Slika 37. Mala radionica stakla s loženjem na drvo (*a pivette*). Umjetnost izrade stakla 1751-1772, Diderot enciklopedija. (www.glassian.org)
Figure 37. Small glass workshop with kilns with oven-dried wood (*a pivette*). The art of glassmaking 1751-1772, Diderot encyclopaedia. (www.glassian.org)

Nakon prvotne obrade sirovine dobivena staklena smjesa skladištila bi se do potrebe konačne obrade. Tada bi se ponovno rastalila i majstor bi uz pomoć cijevi za puhanje (tzv. lule) izvukao iz ljevačkog lonca u peći potrebnu količinu stakla, koju bi izvan peći puhanjem oblikovao. To je mogao napraviti uz pomoć raznih alata, pa i obične drvene letvice. Za druge proizvode, koristili su se i razni kalupi, koji su mogli biti jednodijelni na umetanje ili dvodijelni, koji bi se

colourless gloss to the products. Colour of the glass depended on metal oxides in the collected raw material, but glassmakers gradually started to add oxides artificially in order to control colours and tones of glass (Paynter, Dungworth 2011, 6).

After the primary treatment of the raw material molten glass would be stored until the final production. Then it would be remelted and master would use blowing pipe to draw necessary amount of glass from the

Slika 38. Slovački putujući prodavač stakla. Antonin Hölperl oko 1888. g.
Figure 38. Slovakian travelling glass seller. Antonin Hölperl around 1888

otvarali nakon što bi u njima bila oblikovana posuda. Uz pomoć šipke za pridržavanje, posuda bi se odvajala od lule za puhanje i prema potrebi dorađivala vruća, ponovnim zagrijavanjem u peći. Nakon toga, gotovi stakleni predmeti ostavljali su se u drugim prostorima peći, na nižim temperaturama, kako bi se satima polagano hladili (Paynter, Dungworth 2011, 8).

Gotove posude bile su zamatane u meki materijal poput sijena i pletene košare za daljnji transport. Staklo su staklari sami dostavljali naručiocima (npr. vlasteli, ljekarnicima, trgovcima) u veće gradove. Trgovci u gradovima skladištili su staklarske proizvode, prodavali i slali u udaljenije krajeve (Žaklic 2007, 150). Također su i putujući staklari prodavali staklo po kućama, što je zorno prikazano primjerom iz 19. st. (Slika 38)

melting pot in the kiln which would be shaped by blowing out of the kiln. He could do that using various tools or even a simple piece of wood. The vessel was removed from the blowing pipe by pontil rod and it was finished if necessary by repeated heating in the kiln. Finished glass products were left in other parts of the kiln, on lower temperatures to cool down for hours (Paynter, Dungworth 2011, 8).

Finished vessels were wrapped in soft material such as hay and wicker baskets for further transport. Glass was delivered to orderers (e.g. aristocrats, pharmacists, merchants) in big cities by the glassmakers themselves. Merchants stored glass products in the cities, and sold them or sent to distant regions (Žaklic 2007, 150). Travelling glassmakers also sold glass door-to-door which is well illustrated by an example from the 19th century. (Fig. 38).

1. Zdjela s okomitim rebrima i ukrasom vodoravnih niti zlatne boje. Pula - Rt Seline.
2. Donji dio čaše svjetloljubičaste boje s brušenim ovalnim ukrasima. Pula - Rt Seline.
3. Donji dio čaše svjetloljubičaste boje. Pula - Rt Seline.
4. Donji dio čaše svjetloljubičaste boje. Pula - Rt Seline.
5. Donji dio bezbojne čaše s okomitim naborima. Pula - Rt Seline.
6. Donji dio čaše na stopi s visokom nogom. Pula - Rt Seline.
7. Donji dio čaše. Pula - Rt Seline.
8. Donji dio čaše. Pula - Rt Seline.
9. Gornji dio čaše. Pula - Rt Seline.
10. Gornji dio bezbojne čaše. Pula - Rt Seline.
11. Donji dio čaše na stopi s visokom nogom. Pula - Rt Seline.
12. Zadebljani dio stope čaše na visokoj nozi. Pula - Rt Seline.
13. Donji dio čaše na stopi s visokom nogom. Pula - Rt Seline.
14. Donji dio čaše na stopi s visokom nogom. Pula - Rt Seline.
15. Donji dio posude. Pula - Rt Seline.
16. Ručica posude. Pula - Rt Seline.
17. Gornji dio boce s okomitim naborima. Pula - Rt Seline.
18. Dio tijela *Krautstrunk* čaše. Pula - Rt Seline.
19. Šesterokutno dno zelene boce. Pula - Rt Seline.
20. Donji dio šesterokutne boce. Pula - Rt Seline.
21. Donji dio četverokutne boce. Pula - Rt Seline.
22. Donji dio veće četverokutne boce. Pula - Rt Seline.
23. Dio tijela boce. Pula - Rt Seline.
24. Donji dio četverokutne boce. Pula - Rt Seline.
25. Donji dio četverokutne boce. Pula - Rt Seline.
26. Donji dio četverokutne boce. Pula - Rt Seline.
27. Donji dio četverokutne boce. Pula - Rt Seline.

1. Bowl with vertical ribs and decoration with horizontal threads in golden colour. Pula - Rt Seline.
2. Lower part of a light purple beaker with polished oval decorations. Pula - Rt Seline.
3. Lower part of a light purple beaker. Pula - Rt Seline.
4. Lower part of a light purple beaker. Pula - Rt Seline.
5. Lower part of a colourless beaker with vertical ribs. Pula - Rt Seline.
6. Lower part of a beaker on a ring base with a high foot. Pula - Rt Seline.
7. Lower part of a beaker. Pula - Rt Seline.
8. Lower part of a beaker Pula - Rt Seline.
9. Upper part of a beaker. Pula - Rt Seline.
10. Upper part of a colourless beaker. Pula - Rt Seline.
11. Lower part of a beaker on a ring base with a high foot. Pula - Rt Seline.
12. Thickened part of a ring base on a high foot. Pula - Rt Seline.
13. Lower part of a beaker on a ring base with a high foot. Pula - Rt Seline.
14. Lower part of a beaker on a ring base with a high foot. Pula - Rt Seline.
15. Lower part of a vessel. Pula - Rt Seline.
16. Handle of a vessel. Pula - Rt Seline.
17. Upper part of a bottle with vertical folds. Pula - Rt Seline.
18. Part of the body of a *Krautstrunk* beaker. Pula - Rt Seline.
19. Hexagonal base of a green bottle. Pula - Rt Seline.
20. Lower part of a hexagonal bottle. Pula - Rt Seline.
21. Lower part of a square bottle. Pula - Rt Seline.
22. Lower part of a larger square bottle. Pula - Rt Seline.
23. Part of the body of a bottle. Pula - Rt Seline.
24. Lower part of a square bottle. Pula - Rt Seline.
25. Lower part of a square bottle. Pula - Rt Seline.

28. Donji dio šesterokutne boce. Pula - Rt Seline.
29. Donji dio okrugle boce. Pula - Rt Seline.
30. Donji dio četverokutne boce. Pula - Rt Seline.
31. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
32. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
33. Gornji dio boce s ljevkastim grlom. Pula - Rt Seline.
34. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
35. Gornji dio boce s ljevkastim grlom. Pula - Rt Seline.
36. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
37. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
38. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
39. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
40. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
41. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
42. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
43. Gornji dio boce s ljevkastim grlom. Pula - Rt Seline.
44. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
45. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
46. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.
47. Gornji dio bezbojne boce. Pula - Rt Seline.
48. Gornji dio bezbojne boce. Pula - Rt Seline.
49. Gornji dio boce s izduženim vratom. Pula - Rt Seline.
50. Gornji dio boce s izduženim vratom. Pula - Rt Seline.
51. Gornji dio boce s izduženim vratom. Pula - Rt Seline.
52. Gornji dio boce s čunjastim vratom. Pula - Rt Seline.

26. Lower part of a square bottle. Pula - Rt Seline.
27. Lower part of a square bottle. Pula - Rt Seline.
28. Lower part of a hexagonal bottle. Pula - Rt Seline.
29. Lower part of a round bottle. Pula - Rt Seline.
30. Lower part of a square bottle. Pula - Rt Seline.
31. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
32. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
33. Upper part of a bottle with funnel-shaped neck. Pula - Rt Seline.
34. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
35. Upper part of a bottle with funnel-shaped neck Pula - Rt Seline.
36. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
37. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
38. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
39. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
40. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
41. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
42. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
43. Upper part of a bottle with funnel-shaped neck. Pula - Rt Seline.
44. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
45. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
46. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.
47. Upper part of a colourless bottle. Pula - Rt Seline.
48. Upper part of a colourless bottle. Pula - Rt Seline.
49. Upper part of a bottle with elongated neck. Pula - Rt Seline.
50. Upper part of a bottle with elongated neck. Pula - Rt Seline.

53. Gornji dio boce s čunjastim vratom i bijelom niti na obodu. Pula - Rt Seline.

54. Gornji dio boce s otučenim obodom. Pula - Rt Seline.

55. Gornji dio boce s metalnim čepom. Pula - Rt Seline.

56. Gornji dio boce. Pula - Rt Seline.

57. Gornji dio boce s čunjastim vratom. Pula - Rt Seline.

58. Gornji dio boce.Pula - Rt Seline.

59. Gornji dio boce.Pula - Rt Seline.

60. Gornji dio boce s ljevkastim vratom i bijelom niti na obodu. Pula-Seline.

61. Mala bezbojna boca. Pula - Rt Seline.

62. Gornji dio boce s ljevkastim vratom. Pula - Rt Seline.

63. Gornji dio boce s čunjastim vratom. Pula - Rt Seline.

64. Gornji dio tamnozelene boce s čunjastim grlom. Rovinj - Veštar, slučajni nalaz.

65. Gornji dio maslinastozelene boce s čunjastim grlom i bijelim obrubom oboda. Rovinj-Veštar, slučajni nalaz.

66. Gornji dio ljubičaste boce s bijelim obrubom oboda. Rovinj - Veštar, slučajni nalaz.

67. Gornji dio tamno smećkaste boce s ljevkastim grlom. Rovinj - Veštar, slučajni nalaz.

68. Dio trbuha boce s ravnim stranama tamnosmeđe boje. Rovinj - Veštar, slučajni nalaz.

69. Dio trbuha boce s ravnim stranama zelene boje. Rovinj - Veštar, slučajni nalaz.

70. Gornji dio boce s uspravnim ravnim grlom otučena oboda. Rovinj - Veštar, slučajni nalaz.

71. Gornji dio blago zelenkaste boce s ljevkastim grlom. Rovinj - Veštar, slučajni nalaz.

72. Gornji dio tamnozelene boce s čunjastim grlom. Rovinj - Veštar, slučajni nalaz.

73. Gornji dio bezbojne boce izduženog grla s Γ-profiliranim obodom. Rovinj - Veštar, slučajni nalaz.

74. Gornji dio bezbojne boce izduženog grla s zadebljanjem ispod otvora. Rovinj - Veštar, slučajni nalaz.

75. Gornji dio bezbojne boce izduženog, širokog grla. Rovinj - Veštar, slučajni nalaz.

51. Upper part of a bottle with elongated neck. Pula - Rt Seline.

52. Upper part of a bottle with skittle-shaped neck. Pula - Rt Seline.

53. Upper part of a bottle with skittle-shaped neck and white thread on the rim. Pula - Rt Seline.

54. Upper part of a bottle with damaged rim. Pula - Rt Seline.

55. Upper part of a bottle with a metal stopper. Pula - Rt Seline.

56. Upper part of a bottle. Pula - Rt Seline.

57. Upper part of a bottle with skittle-shaped neck. Pula - Rt Seline.

58. Upper part of a bottle. Pula - Rt Seline.

59. Upper part of a bottle. Pula - Rt Seline.

60. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula-Seline.

61. Small colourless bottle. Pula - Rt Seline.

62. Upper part of a bottle with funnel-shaped neck. Pula - Rt Seline.

63. Upper part of a bottle with skittle-shaped neck.. Pula - Rt Seline.

64. Upper part of a dark green bottle with skittle-shaped neck. Rovinj - Veštar, chance find.

65. Upper part of an olive-green bottle with skittle-shaped neck and white lining of the rim. Rovinj-Veštar, chance find.

66. Upper part of a purple bottle with white lining of the rim. Rovinj - Veštar, chance find.

67. Upper part of a dark brownish bottle with funnel-shaped neck. Rovinj - Veštar, chance find.

68. Part of a belly of a dark brown bottle with flat sides. Rovinj - Veštar, chance find

69. Part of a belly of a green bottle with flat sides Rovinj - Veštar, chance find.

70. Upper part of a bottle with vertical flat neck and damaged rim. Rovinj - Veštar, chance find.

71. Upper part of a greenish bottle with funnel-shaped neck. Rovinj - Veštar, chance find.

72. Upper part of a dark green bottle with skittle-shaped neck. Rovinj - Veštar, chance find.

73. Upper part of a colourless bottle with elongated neck with Γ-shaped rim. Rovinj - Veštar, chance find.

76. Gornji dio fenjera. Rovinj - Veštar, slučajni nalaz.

77. Dno tamnosmećkaste zdjelice s okomitim rebrima Rovinj - Veštar, slučajni nalaz.

78. Donji dio bezbojne bočice oblog presjeka. Rovinj - Veštar, slučajni nalaz.

79. Gornji dio tamnosmećkaste boce s ljevkastim grlom. Rovinj - Veštar, slučajni nalaz.

80. Dno tamnozelene boce šesterokutnog presjeka. Rovinj - Veštar, slučajni nalaz.

81. Dno zelene zdjelice s reljefnim ukrasom. Rovinj - Veštar, slučajni nalaz.

82. Dno maslinastozelene zdjelice s reljefnim ukrasom. Rovinj- Veštar, slučajni nalaz.

84. Ručkica sivkastog tona. Rovinj - Veštar, slučajni nalaz.

85. Dio bezbojne čaše sa svjetloplavim vodoravno apliciranim rebrom. Rovinj - Veštar, slučajni nalaz.

86. Ručkica svjetloplave boje s aplikacijama u bezbojnom staklu. Rovinj - Veštar, slučajni nalaz.

87. Kuglasto zadebljanje nožice čaše sivkaste boje. Rovinj - Veštar, slučajni nalaz.

88. Zelena nožica čaše s kuglastim zadebljanjem. Rovinj - Veštar, slučajni nalaz.

89. Zelena kuglasta perla. Rovinj -Veštar, slučajni nalaz.

90. Polovina svjetloplave perle s okomitim urezima. Rovinj - Veštar, slučajni nalaz.

92. Svjetloplava perla s višebojnim "milefiori" umetkom. Rovinj - Veštar, slučajni nalaz.

96. Dio tijela posude s blagim rebrima. Rovinj - Veštar, slučajni nalaz.

97. Rub svjetlozelene zdjele ili čaše s bijelom niti na rubu. Rovinj - Veštar, slučajni nalaz.

100. Crna staklena sirovina s tragovima taljenja. Rovinj - Veštar, slučajni nalaz.

102. Rastaljeni komad zelenog stakla. Rovinj - Veštar, slučajni nalaz.

108. Dio bezbojne stijenke posude s manjim rebrom. Rovinj - Veštar, slučajni nalaz.

110. Stakleni štapić svjetloplave boje. Dužina 40 mm, Fi 6 mm. Rovinj - Veštar, slučajni nalaz.

74. Upper part of a colourless bottle with elongated neck and thickening under the opening. Rovinj - Veštar, chance find

75. Upper part of a colourless bottle with elongated, wide neck. Rovinj - Veštar, chance find.

76. Upper part of a lantern. Rovinj - Veštar, chance find..

77. Base of a small dark brown bowl with vertical ribs. Rovinj - Veštar, chance find.

78. Lower part of a small colourless bottle with round cross-section. Rovinj - Veštar, chance find.

79. Upper part of a dark brown bottle with funnel-shaped neck. Rovinj - Veštar, chance find.

80. Base of a dark green bottle with hexagonal cross-section. Rovinj - Veštar, chance find.

81. Base of a small green bowl with a relief ornament. Rovinj - Veštar, chance find.

82. Base of a small olive-green bowl with a relief ornament. Rovinj- Veštar, chance find.

84. Small handle in greyish tone. Rovinj - Veštar, chance find.

85. Part of a colourless beaker with light blue rib applied horizontally. Rovinj - Veštar, chance find.

86. Small light blue handle with appliqués in colourless glass. Rovinj - Veštar, chance find.

87. Greyish gobular knob on the beaker foot. Rovinj - Veštar, chance find..

88. Green foot of a beaker with globular knob. Rovinj - Veštar, chance find.

89. Green globular bead. Rovinj -Veštar, chance find.

90. Half of light blue bead with vertical notches. Rovinj - Veštar, chance find.

92. Light blue bead with polychrome „millefiori" insert. Rovinj - Veštar, chance find.

96. Part of a vessel body with slightly pronounced ribs. Rovinj - Veštar, slučajni nalaz.

97. Edge of light green bowl or beaker with a white thread on the edge. Rovinj - Veštar, chance find.

100. Black glass raw material with traces of melting. Rovinj - Veštar, chance find.

102. Molten piece of green glass. Rovinj - Veštar, chance find.

108. Fragment of a colourless vessel wall with a small rib. Rovinj - Veštar, chance find.

111. Staklena cjevčica tamnoplave boje. Dužina 46 mm, Fi 5 mm. Rovinj - Veštar, slučajni nalaz.

112. Staklena cjevčica tamnosmeđe boje. Dužina 35 mm, Fi 8 mm. Rovinj - Veštar, slučajni nalaz.

113. Stakleni štapić svjetlosmeđe boje. Dužina 31 mm, Fi 10 mm. Rovinj - Veštar, slučajni nalaz.

114. Stakleni štapić svjetlozelene boje. Dužina 57 mm, Fi 4 mm. Rovinj - Veštar, slučajni nalaz.

115. Stakleni štapić tamnoplave boje. Dužina 66 mm, Fi 18 mm. Rovinj - Veštar, slučajni nalaz.

116. Stakleni štapić tamnozelene boje. Dužina 82 mm, Fi 17 mm. Rovinj - Veštar, slučajni nalaz.

117. Stakleni štapić svjetlozelene boje. Dužina 87 mm, Fi 4 mm. Rovinj - Veštar, slučajni nalaz.

118. Svinuti stakleni štapić svjetlozelene boje. Dužina 25 mm, Fi 4 mm. Rovinj - Veštar, slučajni nalaz.

119. Svinuti stakleni štapić svjetlozelene boje sa zelenim preljevom. Dužina 43 mm, Fi 5 mm. Rovinj - Veštar, slučajni nalaz.

120. Svinuti stakleni štapić bijele boje. Dužina 32 mm, Fi 5 mm. Rovinj - Veštar, slučajni nalaz.

123. Rastaljeni komadići plavog stakla. Rovinj - Veštar, Sonda B 2, SJ3.

124. Staklena cjevčica smeđe boje. Dužina 28 mm, Fi 5 mm. Rovinj - Veštar, Sonda B 1, SJ3.

125. Ulomak tijela posude zelene boje. Rovinj - Veštar, Sonda B 2, SJ3.

126. Ulomak stakla zelene boje. Rovinj - Veštar, Sonda B 2, SJ3.

127. Stakleni štapić zelene boje. Dužina 10 mm, Fi 1,5 mm. Rovinj-Veštar, Sonda B 2, SJ3.

128. Stakleni štapić zelene boje. Dužina 12 mm, Fi 2 mm. Rovinj - Veštar, Sonda B 2, SJ3.

173. Dno staklene posude s visokom stopom svjetloljubičaste boje. Rovinj - Veštar, slučajni nalaz.

187. Gornji dio boce s visokim vratom. Pakoštane - Veli Škoj

188. Donji dio pehara. Pakoštane - Veli Škoj

189. Uljanica? Ližnjan - Kuje mandrač

190. Donji dio četverokutne boce. Pirovac - Prosika

191. Gornji dio boce s ljevkastim vratom i bijelom niti na obodu. Pirovac - Prosika

110. Light blue glass stick. Length 40 mm, Fi 6 mm. Rovinj - Veštar, chance find.

111. Dark blue glass tube. Length 46 mm, Fi 5 mm. Rovinj - Veštar, chance find.

112. Dark brown glass tube. Length 35 mm, Fi 8 mm. Rovinj - Veštar, chance find..

113. Light brown glass stick. Length 31 mm, Fi 10 mm. Rovinj - Veštar, chance find..

114. Light green glass stick. Length 57 mm, Fi 4 mm. Rovinj - Veštar, chance find.

115. Dark blue glass stick. Length 66 mm, Fi 18 mm. Rovinj - Veštar, chance find..

116. Dark green glass stick. Length 82 mm, Fi 17 mm. Rovinj - Veštar, chance find.

117. Light green glass stick. Length 87 mm, Fi 4 mm. Rovinj - Veštar, chance find.

118. Bent light green glass stick. Length 25 mm, Fi 4 mm. Rovinj - Veštar, chance find.

119. Bent light green glass stick with green coating. Length 43 mm, Fi 5 mm. Rovinj - Veštar, chance find.

120. Bent white glass stick. Length 32 mm, Fi 5 mm. Rovinj - Veštar, chance find.

123. Molten pieces of blue glass. Rovinj - Veštar, probe B 2, SJ3.

124. Brown glass tube. Length 28 mm, Fi 5 mm. Rovinj - Veštar, probe B 1, SJ3.

125. Fragment of a body of a green vessel. Rovinj - Veštar, probe B 2, SJ3.

126. Fragment of green glass. Rovinj - Veštar, probe B 2, SJ3.

127. Green glass stick. Length 10 mm, Fi 1,5 mm. Rovinj-Veštar, probe B 2, SJ3.

128. Green glass stick. Length 12 mm, Fi 2 mm. Rovinj - Veštar, probe B 2, SJ3.

173. Base of a light purple glass vessel with a high ring base. Rovinj - Veštar, chance find.

187. Upper part of a bottle with high neck. Pakoštane - Veli Škoj

188. Lower part of a goblet. Pakoštane - Veli Škoj

189. Oil lamp? Ližnjan - Kuje mandrač

190. Lower part of a square bottle. Pirovac - Prosika

191. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pirovac - Prosika

192. Gornji dio ljevkaste boce. Rovinj - Samer

193. Donji dio uže četverokutne boce. Rovinj - Lone

194. Manja boca s reljefnim natpisom. Ližnjan - Uljeva

195. Srednji dio uže četverokutne boce s pečatom. Ližnjan - Uljeva

196. Gornji dio boce s otučenim obodom. Rovinj - Sv. Katarina

197. Donji dio uže četverokutne boce. Kožino - Sv. Bartul

198. Gornji dio kružne boce. Kožino - Sv. Bartul

199. Dno četverokutne boce. Vrgada - Artina

200. Gornji dio bezbojne boce. Duga uvala - Vinjole

201. Četverokutna zelena boca s pečatom. Otok Ošljak

202. Zelena boca kružnog presjeka s pečatom. Ližnjan- Kuje

203. Gornji dio bezbojne boce. Pula - Rt Seline.

204. Donji dio boce na visokoj nozi. Pula - Rt Seline.

205. Gornji dio bezbojne boce. Pula - Rt Seline.

206. Gornji dio bezbojne boce. Pula - Rt Seline.

207. Gornji dio boce s čunjastim grlom. Pula - Rt Seline.

208. Gornji dio zelene boce s ljevkastim grlom. Pula - Rt Seline.

209. Gornji dio smeđe boce s oblom trakom ispod oboda. Pula - Rt Seline.

210. Gornji dio bezbojne boce. Pula - Rt Seline.

211. Gornji dio bezbojne boce. Pula - Rt Seline.

212. Gornji dio smeđe boce s oblom trakom ispod oboda. Pula - Rt Seline.

213. Gornji dio bezbojne boce. Pula - Rt Seline.

214. Gornji dio zelene boce s ljevkastim grlom. Pula - Rt Seline.

215. Gornji dio svjetloljubičaste boce s uskim grlom. Pula - Rt Seline.

216. Gornji dio bezbojne boce. Pula - Rt Seline.

217. Gornji dio boce sa čunjastim grlom. Pula - Rt Seline.

218. Gornji dio bezbojne boce s otučenim obodom. Pula - Rt Seline.

192. Upper part of a funnel-shaped bottle. Rovinj - Samer

193. Lower part of a narrow square bottle. Rovinj - Lone

194. Smaller bottle with a relief inscription. Ližnjan - Uljeva

195. Central part of a narrow square bottle with a stamp. Ližnjan - Uljeva

196. Upper part of a bottle with damaged rim. Rovinj - Sv. Katarina

197. Lower part of a narrow square bottle. Kožino - Sv. Bartul

198. Upper part of a round bottle. Kožino - Sv. Bartul

199. Base of a square bottle. Vrgada - Artina

200. Upper part of a colourless bottle. Duga uvala - Vinjole

201. Green square bottle with a stamp. Otok Ošljak

202. Green bottle with round cross-section and a stamp. Ližnjan- Kuje

203. Upper part of a colourless bottle. Pula - Rt Seline.

204. Lower part of a bottle on a high foot. Pula - Rt Seline.

205. Upper part of a colourless bottle. Pula - Rt Seline.

206. Upper part of a colourless bottle. Pula - Rt Seline.

207. Upper part of a bottle with skittle-shaped neck. Pula - Rt Seline.

208. Upper part of a green bottle with funnel-shaped neck. Pula - Rt Seline.

209. Upper part of a brown bottle with a rounded band under the rim. Pula - Rt Seline.

210. Upper part of a colourless bottle. Pula - Rt Seline.

211. Upper part of a colourless bottle. Pula - Rt Seline.

212. Upper part of a brown bottle with a rounded band under the rim. Pula - Rt Seline.

213. Upper part of a colourless bottle. Pula - Rt Seline.

214. Upper part of a green bottle with a funnel-shaped neck. Pula - Rt Seline.

215. Upper part of a light purple bottle with a narrow neck. Pula - Rt Seline.

219. Gornji dio svjetlozelene boce s uskim grlom. Pula - Rt Seline.

220. Gornji dio grla boce s blago razvraćenim obodom. Pula - Rt Seline.

221. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.

222. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.

223. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.

224. Gornji dio boce s ljevkastim grlom i bijelom niti na obodu. Pula - Rt Seline.

225. Gornji dio boce s ljevkastim vratom i bijelom niti na obodu. Pula - Rt Seline.

226. Gornji dio tamnozelenog demižona sa zakošenim obodom. Pula - Rt Seline.

227. Bezbojna čaša debelih stijenki. Pula - Rt Seline.

228. Bezbojna čaša debelih stijenki s brušenim ovalnim ukrasima.Pula - Rt Seline.

229. Bezbojna čaša sa okomitim naborima. Pula - Rt Seline.

230. Čunjasta čaša ljubičaste boje. Pula - Rt Seline.

231. Čunjasta čaša ljubičaste boje. Pula - Rt Seline.

232. Čunjasta čaša sa stopom ljubičaste boje. Pula - Rt Seline.

233. Čunjasta čaša ljubičaste boje. Pula - Rt Seline.

234. Čunjasta čaša ljubičaste boje. Pula - Rt Seline.

235. Čunjasta čaša ljubičaste boje. Pula - Rt Seline.

236. Čunjasta čaša sa stopom ljubičaste boje.Pula - Rt Seline.

237. Dio gornjeg dijela bezbojne čaše. Pula - Rt Seline.

238. Donji dio bezbojne čaše. Pula - Rt Seline.

239. Gornji dio male čunjaste čaše. Pula - Rt Seline.

240. Dio kružnog prozorskog stakla. Pula - Rt Seline.

241. Mala bočica s urezanim prikazom biljke. Pula - Rt Seline.

242. Donji dio pehara. Pula - Rt Seline.

243. Gornji izduženi dio fenjera. dio Pula - Rt Seline.

244. Gornji izduženi dio fenjera. Pula - Rt Seline.

245. Gornji izduženi dio fenjera. Pula - Rt Seline.

216. Upper part of a colourless bottle. Pula - Rt Seline.

217. Upper part of a bottle with a skittle-shaped neck. Pula - Rt Seline.

218. Upper part of a colourless bottle with a damaged rim. Pula - Rt Seline.

219. Upper part of a light green bottle with a narrow neck. Pula - Rt Seline.

220. Upper part of the neck of a bottle with slightly everted rim. Pula - Rt Seline.

221. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.

222. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.

223. Upper part of a bottle with funnel-shaped neck and white thread on the rim Pula - Rt Seline.

224. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.

225. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Pula - Rt Seline.

226. Upper part of a dark green demijohn with a slanted rim. Pula - Rt Seline.

227. Colourless beaker with thick walls. Pula - Rt Seline.

228. Colourless beaker with thick walls and polished oval decorations. Pula - Rt Seline.

229. Colourless beaker with vertical folds. Pula - Rt Seline.

230. Purple skittle-shaped beaker. Pula - Rt Seline.

231. Purple skittle-shaped beaker. Pula - Rt Seline.

232. Skittle-shaped beaker with a purple ring-base. Pula - Rt Seline.

233. Purple skittle-shaped beaker. Pula - Rt Seline.

234. Purple skittle-shaped beaker. Pula - Rt Seline.

235. Purple skittle-shaped beaker. Pula - Rt Seline.

236. Skittle-shaped beaker with a purple ring-base. Pula - Rt Seline.

237. Fragment of the upper part of a colourless beaker. Pula - Rt Seline.

238. Lower part of a colourless beaker. Pula - Rt Seline.

239. Upper part of a small skittle-shaped beaker. Pula - Rt Seline.

240. Fragment of a round window pane. Pula - Rt Seline.

246. Gornji izduženi dio fenjera. Pula - Rt Seline.
247. Donji dio pehara. Pula - Rt Seline.
248. Donji dio zdjelice s kapljičastim reljefom. Pula - Rt Seline.
249. Bezbojni ulomak stakla. Pula - Rt Seline.
250. Donji dio četverokutne boce. Pula - Rt Seline.
251. Srednji dio četverokutne boce. Pula - Rt Seline.
252. Srednji dio četverokutne boce. Pula - Rt Seline.
253. Donji dio kružne boce. Pula - Rt Seline.
254. Donji dio kružne boce s jako uvučenim dnom. Pula - Rt Seline.
255. Donji dio četverokutne boce. Pula - Rt Seline.
256. Srednji dio četverokutne boce. Pula - Rt Seline.
257. Gornji dio zelenkaste boce. Pula - Rt Seline.
258. Donji dio kružne boce. Pula - Rt Seline.
259. Dio tijela boce s natpisom. Pula - Rt Seline.
260. Srednji dio četverokutne boce. Pula - Rt Seline.
261. Donji dio šesterokutne boce. Pula - Rt Seline.
262. Donji dio četverokutne boce. Pula - Rt Seline.
263. Donji dio šesterokutne boce. Pula - Rt Seline.
264. Gornji dio boce s ljevkastim vratom i bijelom niti na obodu. Ližnjan - Uljeva C.
265. Ulomak bezbojnog stakla. Ližnjan - Uljeva C.
266. Ulomak zelenkastog stakla. Ližnjan - Uljeva C.
267. Ulomak svijetlo ljubičastog stakla. Ližnjan - Uljeva C.
268. Ulomak tamno zelenog stakla. Ližnjan - Uljeva C.
269. Ulomak zelenkastog stakla. Ližnjan - Uljeva C.
270. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
271. Ulomak zelenkastog stakla. Ližnjan - Uljeva C.
272. Ulomak svijetlo ljubičastog stakla. Ližnjan - Uljeva C.
273. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
274. Ulomak zelenog stakla. Ližnjan - Uljeva C.
275. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.

241. Small bottle with an incised plant depiction. Pula - Rt Seline.
242. Lower part of a goblet. Pula - Rt Seline.
243. Upper elongated part of the lantern. Pula - Rt Seline.
244. Upper elongated part of the lantern. Pula - Rt Seline.
245. Upper elongated part of the lantern.. Pula - Rt Seline.
246. Upper elongated part of the lantern.. Pula - Rt Seline.
247. Lower part of a goblet. Pula - Rt Seline.
248. Lower part of a small bowl with drop-shaped relief. Pula - Rt Seline.
249. Colourless glass fragment. Pula - Rt Seline.
250. Lower part of a square bottle. Pula - Rt Seline.
251. Central part of a square bottle. Pula - Rt Seline.
252. Central part of a square bottle. Pula - Rt Seline.
253. Lower part of a round bottle. Pula - Rt Seline.
254. Lower part of a round bottle with distinctly concave base. Pula - Rt Seline.
255. Lower part of a square bottle. Pula - Rt Seline.
256. Central part of a square bottle. Pula - Rt Seline.
257. Upper part of a greenish bottle. Pula - Rt Seline.
258. Lower part of a round bottle. Pula - Rt Seline.
259. Fragment of the body of a bottle with an inscription. Pula - Rt Seline.
260. Central part of a square bottle. Pula - Rt Seline.
261. Lower part of a hexagonal bottle. Pula - Rt Seline.
262. Lower part of a square bottle. Pula - Rt Seline.
263. Lower part of a hexagonal bottle. Pula - Rt Seline.
264. Upper part of a bottle with funnel-shaped neck and white thread on the rim. Ližnjan - Uljeva C.
265. Fragment of colourless glass. Ližnjan - Uljeva C.
266. Fragment of greenish glass. Ližnjan - Uljeva C.
267. Fragment of light purple glass. Ližnjan - Uljeva C.
268. Fragment of dark green glass. Ližnjan - Uljeva C.
269. Fragment of greenish glass. Ližnjan - Uljeva C.
270. Fragment of light purple glass Ližnjan - Uljeva

276. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
277. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
278. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
279. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
280. Ulomak zelenkastog stakla. Ližnjan - Uljeva C.
281. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
282. Ulomak stakla tamnoplave boje. Ližnjan - Uljeva C.
283. Ulomak svjetloljubičastog stakla. Ližnjan - Uljeva C.
284. Donji dio četvrtaste zelene boce. Mali Iž - Vodenjak.
285. Dno bezbojne staklene posude. Rovinj - Veštar, Rov F, SJ 1, 22.5.2013.
286. Bezbojni stakleni ulomak. Rovinj - Veštar, Rov F, SJ 1, 22.5.2013.
287. Svinuti stakleni štapić svijetle plavosive boje. Dužina 29 mm Fi 4 mm. Rovinj - Veštar, Rov F, SJ 1, 22.5.2013.
288. Donji dio čunjaste čaše svjetloljubičaste boje. Rovinj - Veštar, slučajni nalaz.
289. Gornji dio smeđe zelene boce. Biograd - Galešnjak jug.
290. Ulomak zelenkastog stakla s tragovima pozlate. Rovinj - Veštar, Rov E, SJ 1, 23.5.2013.
291. Ulomak bezbojnog stakla. Rovinj - Veštar, Sonda Rov E, SJ 1, 23.5.2013.
292. Crna staklena sirovina s tragovima taljenja. Rovinj - Veštar, Rov F, SJ 1. 21.5.2013.
293. Ulomak zelenog stakla. Rovinj - Veštar, Sonda D, SJ 1, 23.5.2013.
294. Ulomak bezbojnog stakla. Rovinj - Veštar, Sonda D, SJ 1, 23.5.2013.
295. Ulomak maslinastozelenog stakla. Rovinj - Veštar, Sonda D, SJ 1, 23.5.2013.
296. Ulomak zelenkastog stakla. Rovinj - Veštar, Sonda D, SJ 1, 23.5.2013.
297. Ulomak blijedo smećkastog stakla. Rovinj - Veštar, Sonda D, SJ 1, 23.5.2013.

C.
271. Fragment of greenish glass. Ližnjan - Uljeva C.
272. Fragment of light purple glass. Ližnjan - Uljeva C.
273. Fragment of light purple glass. Ližnjan - Uljeva C.
274. Fragment of green glass. Ližnjan - Uljeva C.
275. Fragment of light purple glass. Ližnjan - Uljeva C.
276. Fragment of light purple glass. Ližnjan - Uljeva C.
277. Fragment of light purple glass. Ližnjan - Uljeva C.
278. Fragment of light purple glass. Ližnjan - Uljeva C.
279. Fragment of light purple glass. Ližnjan - Uljeva C.
280. Fragment of greenish glass. Ližnjan - Uljeva C.
281. Fragment of light purple glass. Ližnjan - Uljeva C.
282. Fragment of dark blue glass. Ližnjan - Uljeva C.
283. Fragment of light purple glass. Ližnjan - Uljeva C.
284. Lower part of a square green bottle. Mali Iž - Vodenjak.
285. Base of a colourless glass vessel. Rovinj - Veštar, Rov F, SJ 1, 22.5.2013.
286. Colourless glass fragment. Rovinj - Veštar, Rov F, SJ 1, 22.5.2013.
287. Bent light blue-gray glass stick. Length 29 mm Fi 4 mm. Rovinj - Veštar, Rov F, SJ 1, 22.5.2013.
288. Lower part of a light purple skittle-shaped beaker Rovinj - Veštar, chance find.
289. Upper part of a brown-green bottle. Biograd - Galešnjak jug.
290. Fragment of greenish glass with traces of gilding. Rovinj - Veštar, Rov E, SJ 1, 23.5.2013.
291. Fragment of colourless glass. Rovinj - Veštar, probe Rov E, SJ 1, 23.5.2013.
292. Black glass raw material with traces of melting. Rovinj - Veštar, Rov F, SJ 1. 21.5.2013.
293. Fragment of green glass. Rovinj - Veštar, probe D, SJ 1, 23.5.2013.
294. Fragment of colourless glass. Rovinj - Veštar, probe D, SJ 1, 23.5.2013.

298. Ulomak blijedo smećkastog stakla. Rovinj - Veštar, Sonda D, SJ 1, 23.5.2013.

299. Svjetlozeleni ulomak stijenke stakla s dvama nižim ispupčenjima. Rovinj - Veštar, Sonda D, SJ 1, 23.5.2013.

300. Zelena perla s vodoravnim crtama. Rovinj - Veštar, slučajni nalaz.

301. Svjetloplava perla. 4 x 2 mm. Rovinj - Veštar, slučajni nalaz na obali kod mola 3.

302. Polovina svjetloljubičaste čaše s razvraćenim i valovitim stijenkama. Sukošan.

303. Polovina pečatnog grba maslinastozelene boce s natpisom [RO]MANO [Z]ARA [VLA] HOV. Ugljan - Sutomiščica.

304. Dio tamnozelene globularne posude. Rovinj - Soline.

305. Dio tijela svjetloljubičaste boce. Ližnjan - Uljeva C.

306. Dio dna tamnozelene boce. Ližnjan - Uljeva C.

307. Dio tamnozelene boce. Ližnjan - Uljeva C.

308. Zeleni stakleni ulomak. Ližnjan - Uljeva C.

309. Zeleni stakleni ulomak. Ližnjan - Uljeva C.

310. Svjetloljubičasti stakleni ulomak. Ližnjan - Uljeva C.

311. Svjetloljubičasti stakleni ulomak. Ližnjan - Uljeva C.

312. Svjetloljubičasti stakleni ulomak. Ližnjan - Uljeva C.

313. Svjetloljubičasti stakleni ulomak. Ližnjan - Uljeva C.

314. Svjetloljubičasti stakleni ulomak. Ližnjan - Uljeva C.

315. Zeleni stakleni ulomak. Ližnjan - Uljeva C.

316. Dio tijela četverokutne boce. Ližnjan - Uljeva C.

317. Svjetloljubičasti stakleni ulomak. Ližnjan - Uljeva C.

318. Svjetloljubičasti stakleni ulomak. Ližnjan - Uljeva C.

319. Ulomak bezbojnog stakla. Ližnjan - Uljeva C.

320. Gornji dio tamnozelene boce. Ližnjan - Uljeva C.

321. Dio vrata tamnozelene boce. Ližnjan - Uljeva C.

295. Fragment of olive-green glass. Rovinj - Veštar, probe D, SJ 1, 23.5.2013.

296. Fragment of greenish glass. Rovinj - Veštar, probe D, SJ 1, 23.5.2013.

297. Fragment of light brownish glass. Rovinj - Veštar, probe D, SJ 1, 23.5.2013.

298. Fragment of light brownish glass. Rovinj - Veštar, probe D, SJ 1, 23.5.2013.

299. Light green fragment of a glass wall with two lower embossments. Rovinj - Veštar, probe D, SJ 1, 23.5.2013.

300. Green bead with horizontal lines. Rovinj - Veštar, chance find.

301. Light blue bead. 4 x 2 mm. Rovinj - Veštar, chance find on the coast next to quay 3.

302. Half of light purple beaker with everted and wavy walls. Sukošan.

303. Half stamp-coat of arms on an olive-green bottle with an inscription [RO]MANO [Z] ARA [VLA]HOV. Ugljan - Sutomiščica.

304. Part of a dark green globular vessel. Rovinj - Soline.

305. Part of the body of a light purple bottle. Ližnjan - Uljeva C.

306. Part of the base of a dark green bottle. Ližnjan - Uljeva C.

307. Part of a dark green bottle. Ližnjan - Uljeva C.

308. Green glass fragment. Ližnjan - Uljeva C.

309. Green glass fragment. Ližnjan - Uljeva C.

310. Light purple glass fragment. Ližnjan - Uljeva C.

311. Light purple glass fragment. Ližnjan - Uljeva C.

312. Light purple glass fragment. Ližnjan - Uljeva C.

313. Light purple glass fragment.. Ližnjan - Uljeva C.

314. Light purple glass fragment.. Ližnjan - Uljeva C.

315. Green glass fragment. Ližnjan - Uljeva C.

316. Part of the body of a square bottle. Ližnjan - Uljeva C.

317. Light purple glass fragment. Ližnjan - Uljeva C.

318. Light purple glass fragment. Ližnjan - Uljeva C.

319. Fragment of colourless glass. Ližnjan - Uljeva C.

320. Upper part of a dark green bottle. Ližnjan - Uljeva C.

322. Zeleni stakleni ulomak. Ližnjan - Uljeva C.

323. Zeleni stakleni ulomak. Ližnjan - Uljeva C.

324. Obod staklene bezbojne čaše s bijelim rubom. Ližnjan - Uljeva C.

325. Svjetlozeleni stakleni ulomak. Ližnjan - Uljeva C.

326. Dno svjetloljubičaste boce. Ližnjan - Uljeva C.

327. Zeleni stakleni ulomak. Ližnjan - Uljeva C.

328. Ulomak bezbojnog stakla. Ližnjan - Uljeva C.

329. Zeleni stakleni ulomak. Ližnjan - Uljeva C.

330. Zeleni stakleni ulomak dna boce. Ližnjan - Uljeva C.

331. Ulomak bezbojnog stakla. Ližnjan - Uljeva C.

332. Grlo zelene boce. Ugljan - Sv. Petar.

333. Razne perle. Koločepski kanal - Drevine.

334. Ulomak stakla. Sestrunj - Metla.

335. Ulomak stakla s apliciranom bradavicom. Pakoštane - Janice.

1351. Staklena zgura smeđe i žućkaste boje. Rovinj - Veštar, slučajni nalaz.

1352. Obod staklene čaše modre boje s blago izraženim okomitim rebrima. Rovinj - Veštar, Sonda B, SJ 3

1353. Tamnozelena staklena cjevčica. Fi 4 mm, dužina 13 mm. Rovinj - Veštar, Sonda B, SJ 3

1354. Zelena staklena cjevčica. Fi 2 mm, dužina 22 mm. Rovinj - Veštar, Sonda B, SJ 3

1355. Svjetložuta staklena cjevčica. Fi 4 mm, dužina 37 mm. Rovinj - Veštar, Sonda B, SJ 3

1356. Ulomak tamnozelene staklene posude, boce? Rovinj - Veštar, Sonda B, SJ 3

1363. Obod čaše vrlo tankih stijenki svijetlosmeđe boje. Rovinj - Veštar, Sonda B, SJ 6,

1364. Svjetlozelena staklena cjevčica. Fi 6 mm, dužina 42 mm. Rovinj - Veštar, Sonda B, SJ 6

1365. Tamnozelena rastopljena staklena cjevčica. Fi 5 mm, dužina 14 mm. Rovinj - Veštar, Sonda B, SJ 6

1366. Zelena staklena cjevčica. Fi 4 mm, dužina 38 mm. Rovinj - Veštar, Sonda B, SJ 6

321. Part of the neck of a dark green bottle. Ližnjan - Uljeva C.

322. Green glass fragment. Ližnjan - Uljeva C.

323. Green glass fragment. Ližnjan - Uljeva C.

324. Rim of a colourless glass beaker with white edge. Ližnjan - Uljeva C.

325. Light green glass fragment. Ližnjan - Uljeva C.

326. Base of a light purple bottle. Ližnjan - Uljeva C.

327. Green glass fragment. Ližnjan - Uljeva C.

328. Fragment of colourless glass. Ližnjan - Uljeva C.

329. Green glass fragment. Ližnjan - Uljeva C.

330. Green glass fragment of a bottle base. Ližnjan - Uljeva C.

331. Fragment of colourless glass. Ližnjan - Uljeva C.

332. Upper part of a dark green bottle. Ugljan - Sv. Petar.

333. Various beads. Koločepski kanal - Drevine.

334. Glass fragment. Sestrunj - Metla.

335. Glass fragment with applied nipple. Pakoštane - Janice.

1351. Brown and yellowish glass slag. Rovinj - Veštar, chance find.

1352. Rim of a dark blue glass beaker with slightly pronounced vertical ribs. Rovinj - Veštar, probe B, SJ 3

1353. Dark green glass tube. Fi 4 mm, length 13 mm. Rovinj - Veštar, probe B, SJ 3

1354. Green glass tube. Fi 2 mm, length 22 mm. Rovinj - Veštar, probe B, SJ 3

1355. Light yellow glass tube. Fi 4 mm, length 37 mm. Rovinj - Veštar, probe B, SJ 3

1356. Fragment of a dark green glass vessel, bottle? Rovinj - Veštar, probe B, SJ 3

1363. Rim of a beaker with very thin light brown walls. Rovinj - Veštar, probe B, SJ 6,

1364. Light green glass tube. Fi 6 mm, length 42 mm. Rovinj - Veštar, probe B, SJ 6

1365. Dark green melted glass tube. Fi 5 mm, length 14 mm. Rovinj - Veštar, probe B, SJ 6

1366. Green glass tube. Fi 4 mm, length 38 mm. Rovinj - Veštar, probe B, SJ 6

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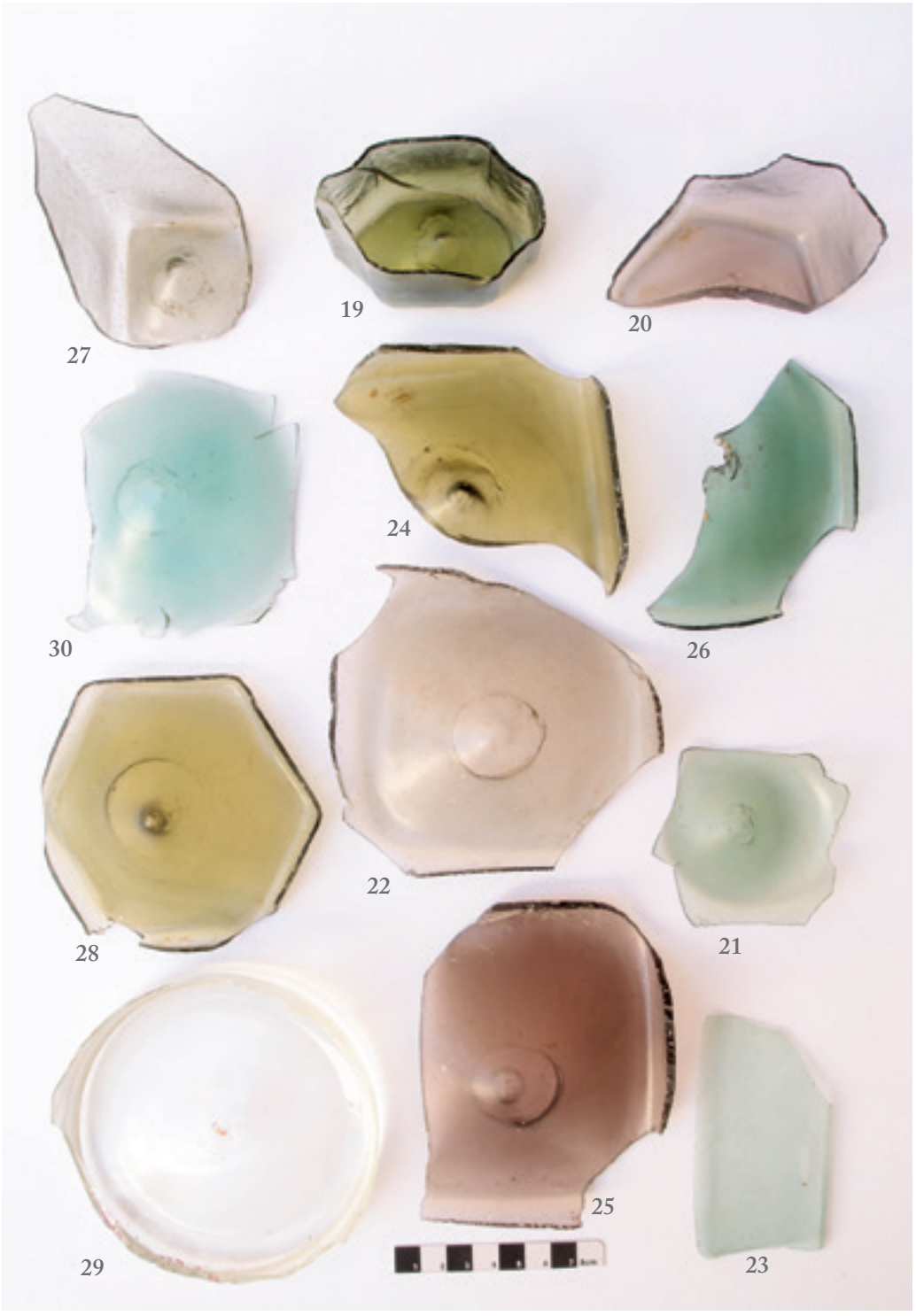
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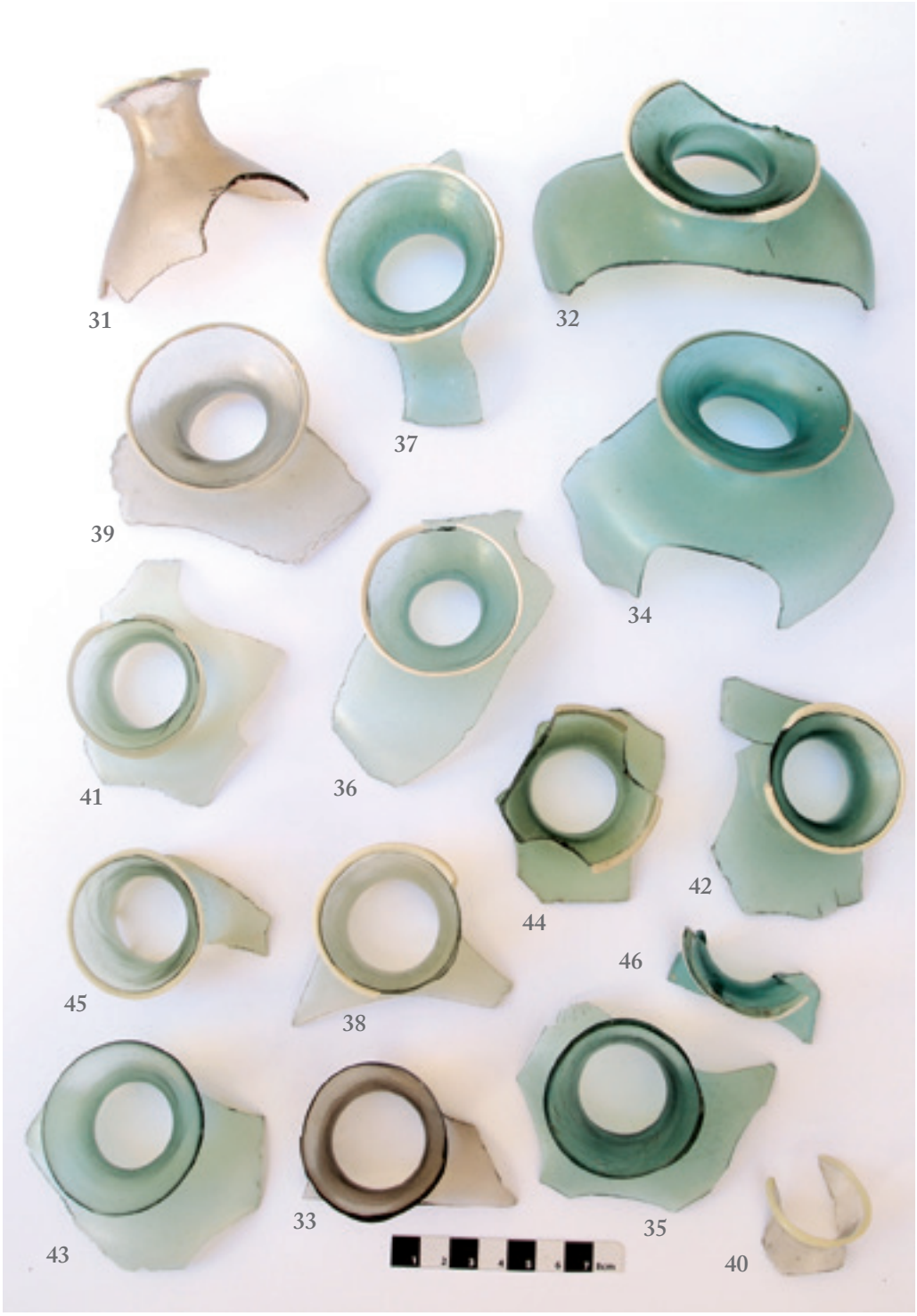
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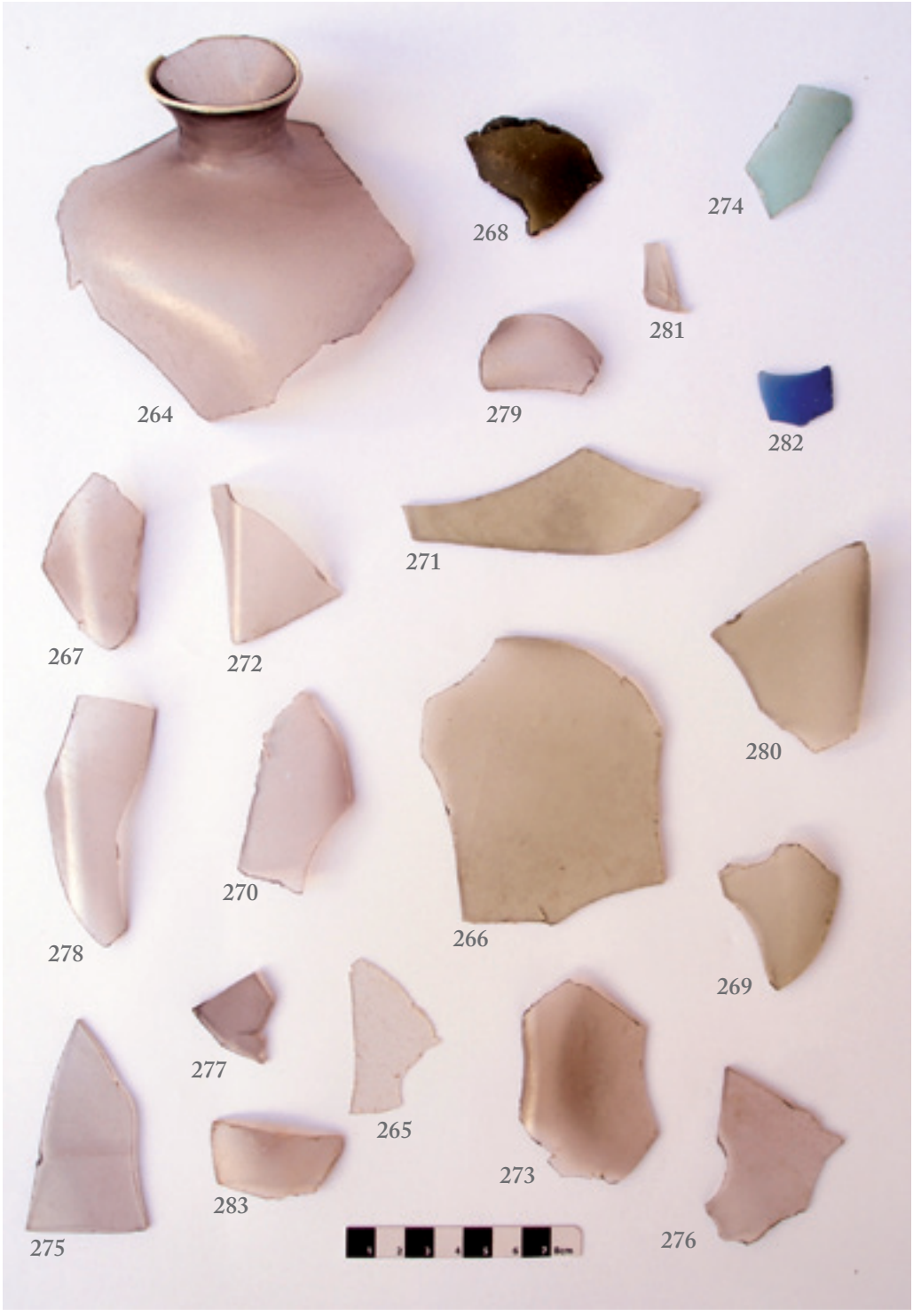
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